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Sep 78

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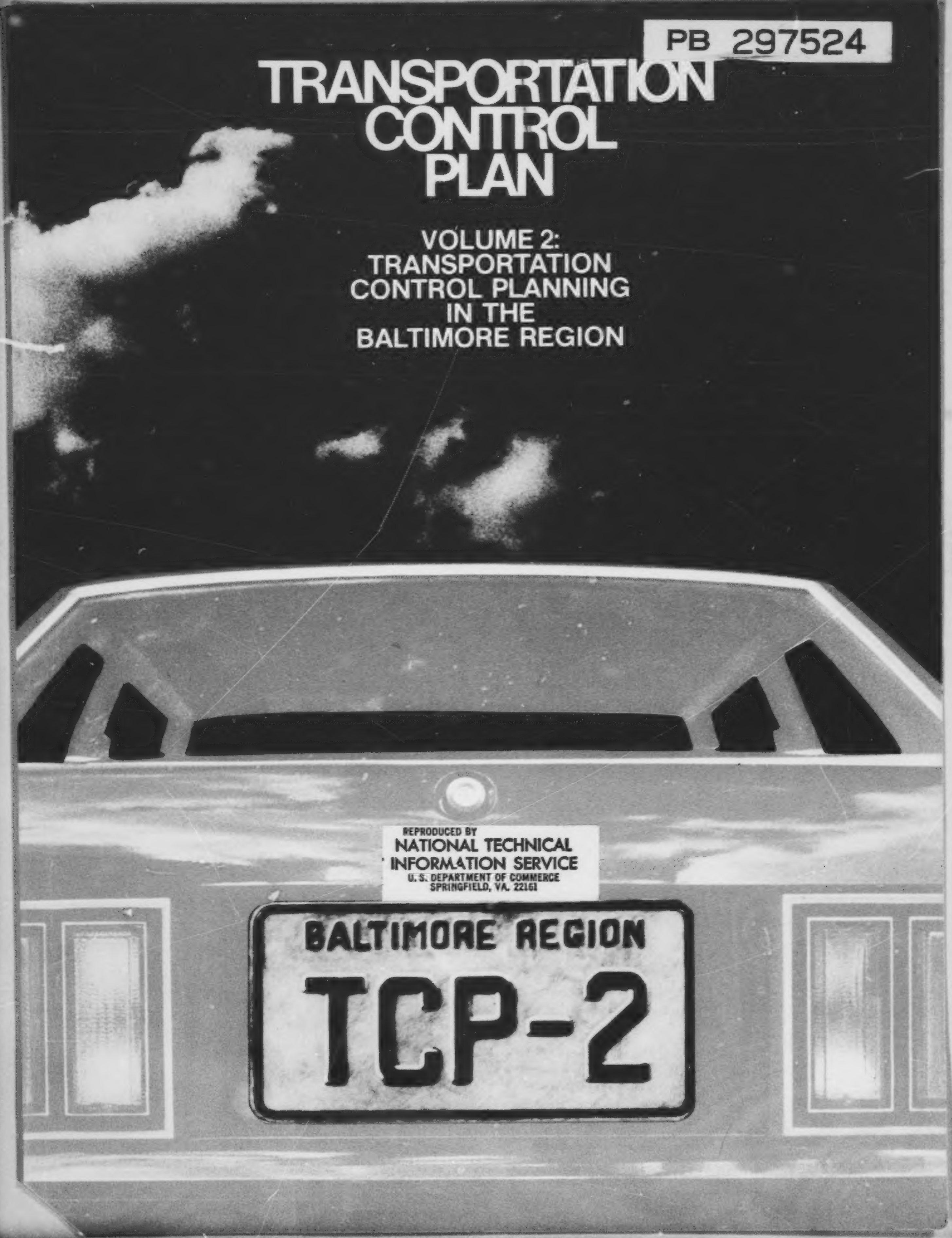
TRANSPORTATION CONTROL PLAN

VOLUME 2: TRANSPORTATION CONTROL PLANNING IN THE BALTIMORE REGION



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The Transportation Control Plan for the Baltimore metropolitan area sets forth the actions that will be taken by the region between now and 1987 to reduce the amount of air pollution caused by motor vehicles. The development and implementation of this plan is required by the Environmental Protection Agency (EPA) as a result of the 1977 Clean Air Act Amendments.

The plan contains control measures both for implementation and for study. Thirteen control measures and a public education campaign are to be implemented by 1982. At least twelve more control measures will be studied by the end of 1980 for possible inclusion in a more detailed and comprehensive transportation control plan to be completed in 1982.

Even after all measures now specified for implementation are fully applied, the region will still not achieve EPA's air quality standards by 1987. Ways to further reducing air pollution in the region will have to be found.

Volume II describes the Baltimore region's transportation control planning process and the control measures to be studied and implemented.

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TRANSPORTATION CONTROL PLAN

VOLUME 2

Transportation Control Planning in the Baltimore Region

September 29, 1978

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I. INTRODUCTION

I. INTRODUCTION

Our health is being threatened by the "good life". How? We drive too much. We have too many cars, making too many trips, traveling too far, carrying too few passengers, producing too much pollution.

An oversimplification of the problem? Perhaps. But the inescapable fact is that automotive pollutants are slowly but surely poisoning the air we breathe. On a typical Friday morning in July 1977, mobile sources in the Baltimore Region--mostly cars and trucks--emitted more than 45 tons of hydrocarbons. That is enough hydrocarbons to fill nearly twenty hot air balloons five stories tall. Our air is so dirty that some areas in the region exceed the national air quality standard on more than eighty days each year during the summer. In other words, for nearly three months out of the year, the air quality in certain parts of the region is injurious to public health.

The negative impacts of air pollution upon human health are well documented. Photochemical oxidants--commonly referred to as smog--can cause respiratory irritation, changes in lung function, and inflammation and watering of the eyes. If the concentrations are great enough, photochemical oxidants can even impair the performance of well-conditioned athletes. Persons with asthma and emphysema are especially affected by high concentrations of these oxidants.

Carbon monoxide is an even more dangerous automotive pollutant. It is colorless, odorless, and tasteless. Carbon monoxide replaces oxygen in the body's circulatory system, not only weakening and impairing heart functions but also significantly reducing a person's ability to perform physical taks, such as jogging, bicycling, or even walking. High concentrations of carbon monoxide endanger the lives of persons who are unable to comensate for the decrease of oxygen in the blood stream--mainly people who suffer from heart trouble, circulatory trouble, and respiratory diseases.

The development and implementation of the Transportation Control Plan is an Environmental Protection Agency (EPA) requirement mandated by the Clean Air Act, as amended in August 1977.[1] Section 110 (a)(1) of the Clean Air Act (CAA) requires that each state develop a revised State Implementation Plan (SIP). The SIP must contain all implementation, enforcement, and maintenance procedures necessary for the state to attain the primary and secondary National Ambient Air Quality Standards (NAAQS).

As part of the SIP, each nonattainment area (any air quality region that is currently exceeding the NAAQS) is required by Section 172(a)(2) of the CAA to develop a Transportation Control Plan (TCP). Since it is a nonattainment area, the Baltimore Region had to develop a TCP. The primary purpose of the TCP is to insure that actions will be taken to reduce the amount of hydrocarbons, carbon monoxide, and nitrogen oxides emitted by mobile sources.

The Transportation Control Plan for the Baltimore Region is composed of four volumes:

- Volume I--Summary

---

[1] 42 USC 7401 et seq.

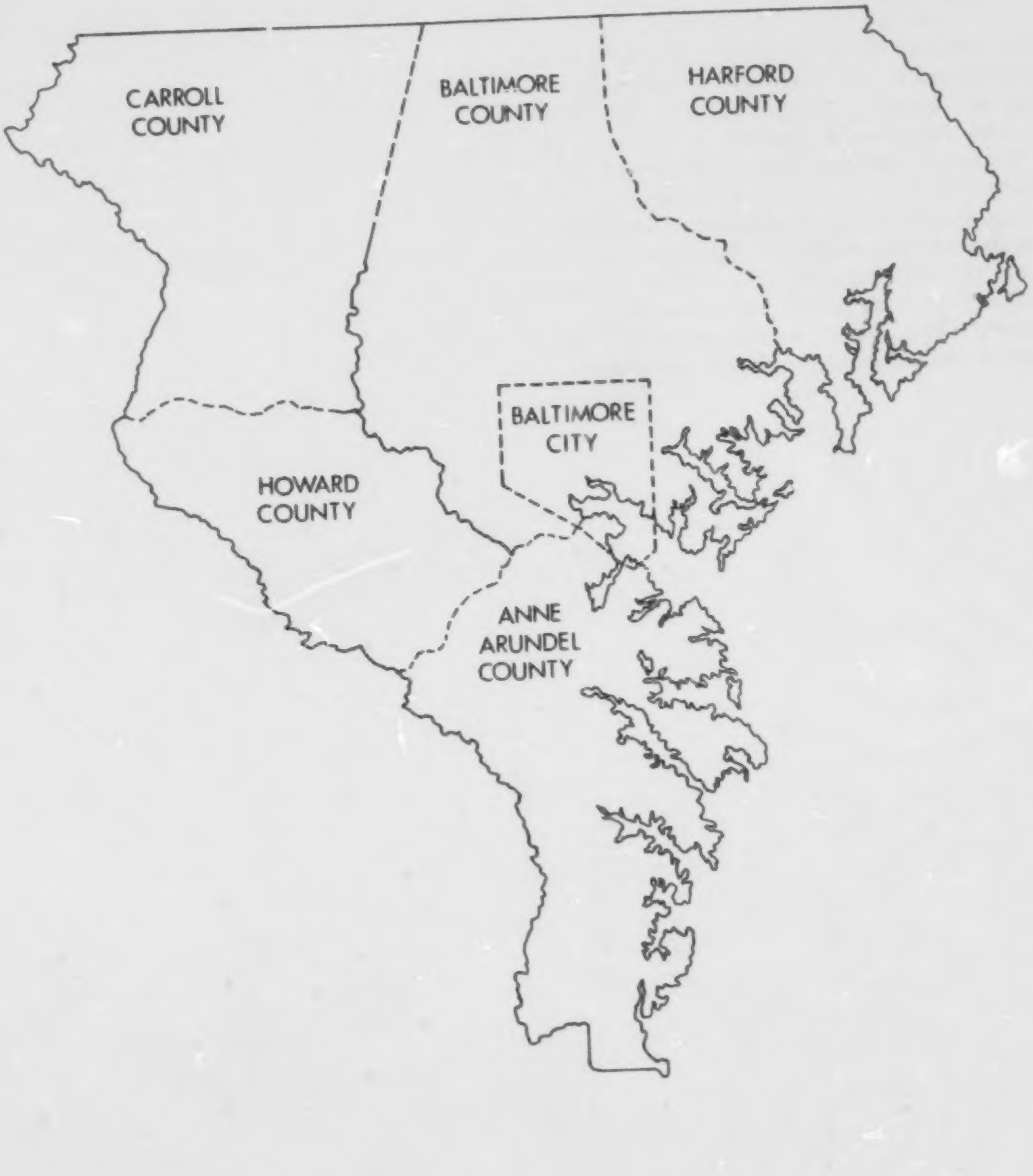
- Volume II--Transportation Control Planning in the Baltimore Region
- Volume III--Technical Documentation
- Volume IV--Evidence of Commitments

The first volume is a summary of the plan's recommendations. Volume Two contains an overview and brief history of the TCP process in the Baltimore Region, a discussion of the region's mobile emissions, and an assessment of each control strategy. The third volume contains technical material that documents the methodology used to calculate travel impacts and other technical data. Volume Four contains documentation of the commitments required for implementation of each control measure.

Figure 1

BALTIMORE REGION

(Metropolitan Baltimore Intrastate Air Quality Control Region)


CARROLL COUNTY
BALTIMORE COUNTY
HARFORD COUNTY
BALTIMORE CITY
HOWARD COUNTY
ANNE ARUNDEL COUNTY

II. TRANSPORTATION CONTROL PLANNING PROCESS

BACKGROUND

The 1970 Amendments to the Clean Air Act[2] required that each state submit a State Implementation Plan (SIP) to the Environmental Protection Agency (EPA) by January 30, 1972. These plans were to contain the necessary implementation, maintenance, and enforcement measures to ensure that each state would attain National Ambient Air Quality Standards (NAAQS) by 1975. The 1970 Amendments to the Clean Air Act also provided a two year extension for those regions unable to meet the 1975 deadline.

Regions that were expected to have difficulty achieving the national standards after the imposition of EPA-mandated controls on auto emissions and stationary sources were also required to submit Transportation Control Plans (TCP). The TCP was to document how an air quality control region planned to reduce pollutants from mobile sources.

The Maryland SIP containing the Baltimore Region TCP was submitted to the EPA on April 16, 1973, by the Maryland Bureau of Air Quality Control (MBAQC). Amendments to the plan were submitted to the EPA on June 15, June 28, and July 9, 1973. The plan and its amendments estimated that a 13 percent reduction in regional vehicle miles of travel (VMT) could occur as a result of implementing the various strategies recommended.

After review of the Maryland SIP, the EPA found the Baltimore Region's TCP unacceptable. The EPA rejected the 13 percent reduction in VMT estimated in the TCP, claiming that the TCP contained insufficient technical data, implementation schedules, and legal and regulatory authority.

In December 1973 the EPA promulgated a new TCP for the Baltimore Region, which revised portions of the original plan. The TCP promulgated by the EPA contained strategies such as bus lanes, parking control, and carpool promotion. These measures compensated for the 13 percent VMT reduction that was rejected in the original plan. Additionally, the EPA proposed transportation control strategies such as retrofit devices on medium-duty and heavy-duty vehicles and a limitation on gasoline distribution for the entire Metropolitan Baltimore Intrastate Air Quality Control Region (MBIAQCR).

Many of these measures were rejected by citizens, local governments, and State agencies as unacceptable. In addition, portions of the plan were either invalidated by the courts or withdrawn by the EPA. As a result, much of the region's 1973 TCP was never implemented.

The inability of the Baltimore Region to implement its 1973 TCP is by no means a unique occurrence. Many other air quality control regions were also unable to implement the transportation control plans and measures that were mandated by the EPA in 1973. The following are the major factors that prevented Maryland and other states from implementing the earlier set of TCP's:

- there was very limited information on the effectiveness and feasibility of the various control measures;
- there was no investigation of the social and economic impacts;

---

[2] The Clean Air Act (42 USC 7401 et. seq.) includes the Clean Air Act of 1963, P.L. 88-206, and all subsequent amendments.

- it was impossible to adapt many of the transportation control measures to the existing institutional framework within the given time constraints;

- the various levels of government lacked the experience to plan and implement effective measures;

- there was a widespread lack of public awareness concerning the severity of air quality problems and the benefits of cleaner air;

- the deadline for meeting the standards was too short to allow credit for long-range measures such as mass transit improvement;

- there was a lack of citizen participation and inter-governmental coordination.

In an effort to improve and strengthen the Clean Air Act, Congress developed a new set of Clean Air Act Amendments, which were signed into law by President Carter on August 7, 1977. The new amendments eliminate many of the procedural issues that hindered the development and implementation of earlier TCP's. They also provide sanctions to be imposed upon states that fail to submit approvable SIP's or TCP's.

Section 174 of the amended Clean Air Act requires that within six months from enactment (i.e., February 7, 1978) the local governments in a nonattainment area designate an organization of local elected officials to prepare a revised TCP. In meeting this mandate, local governments in the Baltimore Region designated the Regional Planning Council (RPC) on January 20, 1978, as the agency responsible for revising the TCP. (See Appendix A: Resolution, Prospectus, Preliminary Assignment of Responsibilities.)

The RPC, local governments, and the State of Maryland also agreed upon the following procedural conditions:

- the Transportation Steering Committee (TSC) would be expanded to include the Secretary of the Department of Health and Mental Hygiene or his designee;

- no TCP would be approved by the RPC without TSC certification;

- the TSC would prepare and approve the annual schedule of work necessary for accomplishing the provisions of the Clean Air Act;

- the RPC would establish a Regional Air Quality Task Force (RAQTF) to provide advice and assistance to the RPC and TSC and to act as a Project Management Committee (PMC);

- upon its development by the TSC, the TCP would first be submitted to local governments for their ratification;

- any local government or State agency representative to the TSC could veto any measure that lies within its responsibility to implement or that abrogates its legal responsbility;

- the RPC would provide for active public participation to the fullest extent practicable.

The RPC designation by local elected officials as the lead agency to prepare the TCP was certified by Acting Governor Lee on March 19, 1978. (See Appendix A: Governor's Certification.)

CITIZEN INVOLVEMENT

The Regional Air Quality Task Force (RAQTF) is the RPC advisory committee charged with the responsibility of developing recommendations for the Transportation Control Plan. The RAQTF has been constituted in accordance with the prospectus portion of the January resolution. (See Appendix A.) The task force is presently composed of approximately fifty representatives from local governments, state agencies, and private organizations with interests in health, the environment, transportation, business, economic development, and community well-being. (See roster of members at end of Volume IV.)

The work of the task force includes the following responsibilities:

1. To recommend the Transportation Control Plan to the Transportation Steering Committee.
2. To guide the work of the technical planning staff:
   - To review and critique staff findings and recommendations; in particular, to point out social and economic impacts and the potential for public acceptance of particular measures or combinations of measures.
   - To offer suggestions for additional or modified control measures to be considered and analyzed by staff.
   - To suggest areas for study emphasis: which measures to concentrate on, which kinds of information are necessary for making informed decisions.
3. To review continuing planning and implementation efforts.
4. To guide and promote citizen education and involvement in the development and implementation of the Transportation Control Plan:
   - To carry information on the TCP to represented organizations; to bring reactions and ideas back to the task force.
   - To assist in identifying groups that would be affected by and interested in particular areas of the TCP.
   - To guide staff in preparing workshops, promotional campaigns, and other mechanisms to educate and involve the public, and to integrate public feedback into the planning process.

At its first meeting on April 11, 1978, the RAQTF decided to meet twice a month, rather than once a month, through June in order to cover as much ground as possible before finalizing its recommendations to the Transportation Steering Committee. At the initial meetings, staff from RPC and appropriate agencies presented background information on the Clean Air Act, the air pollution problem in the region (particularly as it relates to automobile emissions), the process for developing the TCP, and the status and potential of available transportation control measures. Written materials were distributed, and overhead graphics were used to assist the presenters in clarifying the complex and highly technical issues surrounding the TCP. Up-to-date reports on technical findings and analyses were made to the task force as staff work progressed.

In order to carry out its responsibilities more effectively, the RAQTF selected a chairman and vice chairman and formed three standing subcommittees:

- technical advisory subcommittee to guide TCP project management;
- citizen participation subcommittee to guide and promote public outreach;
- inspection and maintenance subcommittee to define and promote an inspection and maintenance program.

On June 6 and 27, 1978, the task force sponsored a two-part work session to formulate recommendations for the TCP. In an effort to gain wider public awareness and input into development of the TCP recommendations, the work sessions were publicized through mailed fliers, press releases, and public service announcements on radio and television. Over fifty people attended each part of the work session, about half of them members of the task force.

On June 6, work session participants were briefed on 26 transportation control measures and asked to evaluate them by filling out a written questionnaire. The results of the questionnaires and preliminary recommendations were presented and discussed on June 27. The RAQTF recommendations were based in part on the ratings and comments from the questionnaires. Tables 1 and 2 summarize the ratings and timing recommendations from the questionnaires. (See Appendix B for questionnaire and results.) The July and August meetings of the task force focused on reviewing revisions to the draft plan.

Table 1

RAQTF WORKSHOP RATINGS OF TRANSPORTATION CONTROL MEASURES

June 6, 1978

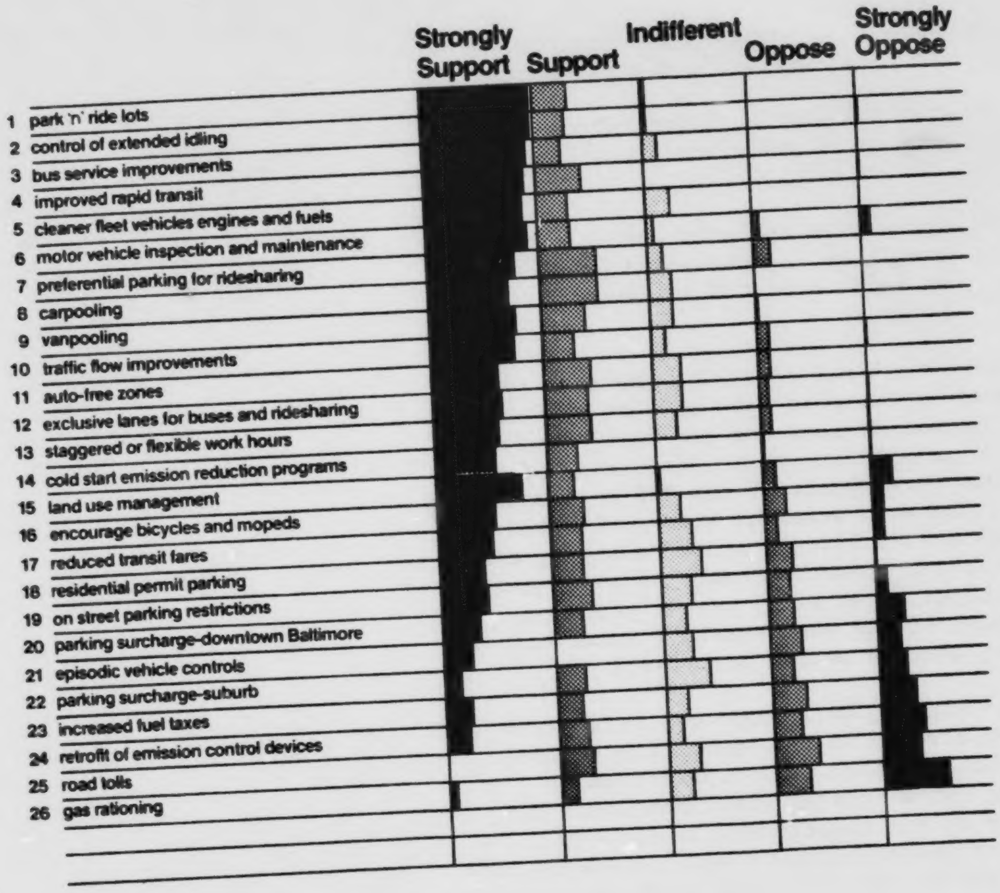
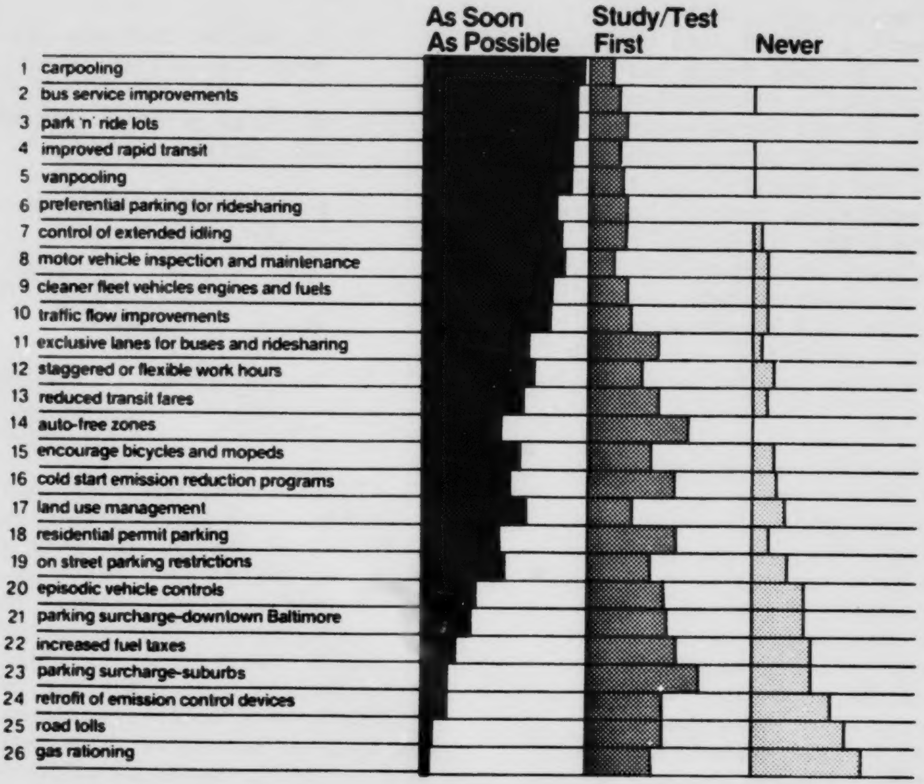


Table 2

RAQTF WORKSHOP TIMING OF TRANSPORTATION CONTROL MEASURES

June 6, 1978



EXPANDING PUBLIC INPUT AND INFORMATION

The Regional Air Quality Task Force has been at the center of RPC's efforts to integrate public input into the transportation control planning process. Its viability has resulted from the participation of interest groups representative of a broad range of community interests. Task force meetings have provided a forum for diverse points of view to be heard on transportation needs, air quality concerns, and economic, social, and environmental impacts. The task force has been a source of both public information and public feedback as task force members have shared information on the development of the TCP and requested reactions from their organizations through meetings, newsletters, and other "in-house" communications. Other interested people who are not task force members have been placed on the mailing list and are encouraged to attend task force meetings. Attendance records show that new people have come to each meeting.

However, task force meetings are only part of a larger framework of integrating informed public input into the development of the TCP. A public information program is essential to a citizen involvement process. While the focal point thus far has been a series of educational materials and presentations developed for those attending task force meetings, several concrete steps have been taken toward significantly broadening the base of citizens who are informed about air quality/transportation issues and who are interested in working toward cleaner air.

As mentioned earlier, the public is encouraged to participate in task force meetings. In addition, a series of informational meetings was held in August and September. These were co-sponsored by the Task Force and the local jurisdictions to coincide with the period of local government review of the draft initial Transportation Control Plan (TCP). The meetings fulfilled several purposes:

1. To further increase the outreach capability of the RAQTF.
2. To evoke general awareness of air quality issues.
3. To highlight local aspects of the regional plan.
4. To encourage citizen support at the local level.
5. To help prepare citizens for the public hearings on the SIP to be held in November.

In addition, the RAQTF staff and individual Task Force members have participated in the organization and publicity of conferences relating to air quality and transportation. These include a Citizens' Conference on Air Pollution sponsored by the Baltimore Environmental Center and the 1978 National Ridesharing Conference, sponsored by the City of Baltimore, the Regional Planning Council, the State of Maryland, and the U.S. Department of Transportation, Federal Highway Administration.

Several up-to-date mailing lists have been developed as a tool for publicizing meetings and disseminating factual information. These lists serve as a basis for an extensive inventory of public and private agencies, organizations, and coalitions with special interests in air quality and transportation and their related issues. The general mailing list consists of over 3,000 Baltimore metropolitan area organizations and individuals, and individual county lists are being developed. In addition, educational materials and RAQTF meeting announcements are sent to Task Force members and other individuals who have attended at least one meeting. This list of especially interested people has grown to approximately 100 people, in addition to regular Task Force members.

Finally, information is disseminated through distribution centers around the region, such as libraries and local planning offices. Current technical and program information is provided to the main libraries of the six jurisdictions. Branch libraries receive only general materials and announcements unless specific requests for additional information are made.

Wherever possible, the RAQTF staff is using the resources of existing programs and organizations to reach special interest groups. Several civic and neighborhood organizations include RAQTF meeting announcements and factual information in their regular mailings. In addition, articles have been submitted on a regular basis to organization newsletters such as the Baltimore Environmental Center's Beacon and the Maryland Coastal Zone Management Program's Coast and Bay Bylines. Organizations that print regular newsletters will be encouraged to print excerpts from the RAQTF bulletins.

The RAQTF staff routinely participates in related activities of existing organizations. For example, staff members sit on the Transportation Committee of the Citizens Planning and Housing Association (CPHA) and on the Environmental and Occupational Health Committee of the American Lung Association of Maryland. Both of these organizations have broad outreach capabilities.

Special public information and educational materials are prepared specifically to increase public awareness of the complexity of major air quality/transportation issues. The Regional Planning Council produces two regular newsletters. The Transportation Review, mailed quarterly to 5,000 individuals, groups, and agencies, keeps readers abreast of significant transportation planning activities. Each issue includes coverage of TCP developments and descriptions of studies that would be of help to citizens and agencies in their assessment of air quality/transportation issues. Focus, the second Regional Planning Council newsletter, covers all of the programs in which RPC is involved. At least one article per issue describes TCP happenings. This publication is also quarterly and is mailed to over 7,500 persons.

Finally, the State Department of Health and Mental Hygiene, through its Air Quality Programs, is proposing to institute a bi-monthly newsletter. This will contain information on air quality matters of concern to all of Maryland's citizens. Space in each issue will concentrate on Baltimore Region TCP developments and announcements.

The RAQTF staff is developing the capability to arrange for knowledgeable speakers on a variety of air quality/transportation subjects to speak at organizational meetings and workshops. In addition, two slide presentations are available that deal with air quality and transportation, respectively. Finally, numerous films have been identified on air quality, transportation, and energy. Making speakers, slides, and films easily accessible to citizens will contribute to increasing awareness of the air pollution problem.

Public meetings, workshops, and special events are publicized in the media. Spot announcements and press releases have been produced and submitted to give the broadest possible coverage to each of these events. RAQTF made use of WJZ-TV's "Speak Out" to announce the Clean Air/Transportation Workshop, and a representative of the task force has appeared on a radio talk show to discuss the TCP recommendations for the Baltimore Region.

In addition, all of the radio and TV stations in the metropolitan area have been personally contacted to request that they include air quality information as part of their regular weather reports. Many have responded positively, and United Press International has agreed to distribute information updated twice a day by Air Quality Programs.

The TCP citizen involvement/information program has begun to establish procedures to provide better accountability to the public. The results of the workshop questionnaire were compiled, ranked, and used by the technical staff as one criterion for determining TCP recommendations. Both the survey results and the subsequent recommendations were distributed to workshop participants, Task Force members, and others. In addition, a procedure is being developed for responding to comments on the proposed TCP as well as providing a summary of public comments at State and local hearings.

ATTAINING THE NATIONAL STANDARDS

Air pollution is composed of several classes of chemicals, including hydrocarbons, carbon monoxide, and nitrogen oxides. The Transportation Control Plan deals primarily with hydrocarbons, which react with sunlight to produce photochemical oxidants, commonly known as smog. Carbon monoxide and nitrogen oxide are also considered, but the effectiveness of the plan is measured mainly in reductions in hydrocarbon emissions.

On a typical July Friday in 1977, an estimated 59.5 metric tons of hydrocarbons were produced in the Baltimore Region during the morning rush hours (6-9 a.m.). Of the total, 45.1 metric tons came from highway motor vehicles; the remainder was generated by stationary sources and off-road vehicles, such as trains, planes, and boats. Morning rush hour figures are used because the hydrocarbons produced during those hours contribute the most to smog formation, since they are exposed to sunlight for the longest period.

The EPA has established the following national ambient air quality standards for photochemical oxidants and carbon monoxide:

Photochemical Oxidants	0.08ppm (160 $\mu g/m^3$)
Carbon Monoxide	
8-hour maximum	9ppm (10 mg/m^3)
1-hour maximum	35ppm (40 mg/m^3)

These standards are not to be exceeded more than once per year. For the region to achieve the standards for photochemical oxidants, the Bureau of Air Quality Control estimates that it will be necessary to reduce daily morning rush hour hydrocarbon emissions by 73 percent (43.4 metric tons), to 16.1 metric tons.

The necessary reduction in hydrocarbons cannot be achieved by any one measure or by reducing pollution from any one source. Instead, several sources of reduction must be combined to produce the required effect.

In 1977, 14.4 of the total 59.5 metric tons of morning hydrocarbon emissions were produced by stationary sources and non-highway vehicles. Adding reasonably available control measures to existing regulations will reduce stationary source hydrocarbon emissions by 5.3 metric tons by 1987.

It is unlikely that stationary source emissions can be reduced beyond that amount. The remaining 38.1 metric ton reduction needed to achieve the EPA standard will have to come from controls on mobile sources of pollution.

The Federal Motor Vehicle Control Program, which requires increasingly strict emissions controls on new automobiles, will reduce morning rush hour hydrocarbon emissions in the region significantly, in spite of projected increases in vehicle miles of travel (VMT). By 1987, the reduction from 1977 levels is expected to amount to 26.6 metric tons. A further reduction of 11.5 metric tons will still be needed from regional control measures if the EPA standard is to be achieved.

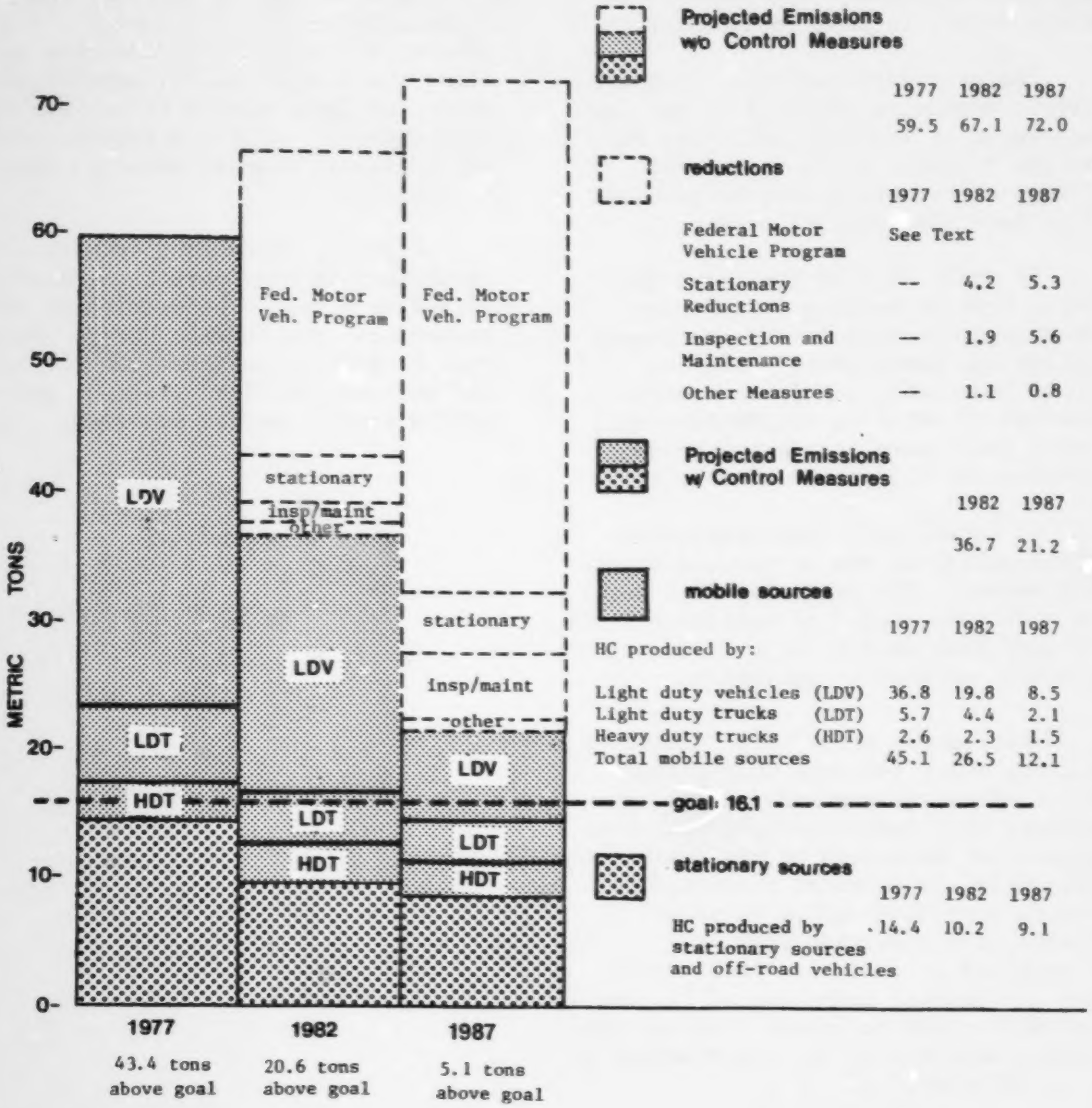
A state program for pollution-related inspection and maintenance of vehicles would further decrease emissions. If the program were to start in 1981, morning hydrocarbon levels would be reduced by 5.6 metric tons in 1987, leaving 5.9 metric tons of hydrocarbons to be eliminated by other measures.

The other twelve control measures recommended for implementation in the Transportation Control Plan would reduce morning rush hour hydrocarbon emissions by only 0.8 metric ton in 1987. As a result, the region's hydrocarbon emissions would still be 5.1 metric tons above the level needed to achieve EPA's photochemical oxidant standard, after all presently planned measures were implemented.

Figure 2 presents a summary of the reductions in hydrocarbon emissions expected as a result of stationary source reductions, the Federal Motor Vehicle Control Program, a regional vehicle inspection and maintenance (I/M) program, and other mobile source control measures.

Figure 2

HYDROCARBON EMISSIONS
Morning Peak Period (6-9 a.m.)
on a Friday in July



43.4 tons above goal | 20.6 tons above goal | 5.1 tons above goal

Projected Emissions w/o Control Measures

1977	1982	1987
59.5	67.1	72.0

reductions

	1977	1982	1987
Federal Motor Vehicle Program	See Text		
Stationary Reductions	--	4.2	5.3
Inspection and Maintenance	—	1.9	5.6
Other Measures	—	1.1	0.8

Projected Emissions w/ Control Measures

1982	1987
36.7	21.2

mobile sources

HC produced by:	1977	1982	1987
Light duty vehicles (LDV)	36.8	19.8	8.5
Light duty trucks (LDT)	5.7	4.4	2.1
Heavy duty trucks (HDT)	2.6	2.3	1.5
Total mobile sources	45.1	26.5	12.1

stationary sources

	1977	1982	1987
HC produced by stationary sources and off-road vehicles	14.4	10.2	9.1

CANDIDATE CONTROL MEASURES

Four key resources were used to develop the list of transportation control measures that were considered for implementation and study in this plan. The primary source of candidate control measures was Section 108(f) of the Clean Air Act, which lists eighteen transportation control measures that Congress considered worthy of analysis by nonattainment areas. All eighteen of these measures have been considered during the revision of the Baltimore Region TCP.

The TCP staff also examined control measures contained in the Pratt/ERT Study,[1] the 1973 TCP promulgated for the Baltimore Region by the EPA, and suggestions of the Regional Air Quality Task Force (RAQTF). The TCP staff eventually developed a list of 26 control measures that were grouped into five categories, as follows:

Incentives for High Occupancy Vehicles

- improved rail transit
- lower public transit fares
- improved bus service
- carpooling
- vanpooling
- exclusive lanes for buses and ridesharing vehicles
- preferential parking for ridesharing vehicles
- park-and-ride lots

Measures for Cleaner Vehicles

- inspection and maintenance of motor vehicles
- cleaner fleet vehicles or fuels
- retrofit of emission control devices
- cold start emission reduction programs

Measures to Reduce Automobile Use

- residential permit parking
- parking surcharge downtown Baltimore
  - $2
  - $1
- regional, downtown level parking charges
- auto-free zones
- gas rationing
- increased fuel taxes

Measures to Reduce Congestion

- traffic flow improvements
- staggered or flexible working hours
- encouragement of bicycling and mopeds
- on-street parking controls
- reduction of extended idling

Other Measures

- land use management
- episodic vehicle controls

Two candidate control measures were added to the above list as a result of comments submitted at the RAQTF-sponsored June 6th public work session. One measure was new--Public Education Campaign. The other measure resulted from separating one of the original 26 measures--Bicycles and Mopeds--into two separate measures. Based on the RAQTF and TCP staff evaluations, 14 of the candidate control measures were selected for study, and one measure was removed from consideration for either implementation or study.

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[1] R. H. Pratt Associates, Inc., Evaluation of Candidate Transportation Control Strategies for the Baltimore Region, TM3, prepared for Maryland Department of Transportation, (in association with ERTS, Inc.), December 1976.

III. MEASURES FOR IMPLEMENTATION

The following are the transportation control measures that have been selected for implementation by 1982 in the Baltimore Region.

Incentives for High Occupancy Vehicles

- park-and-ride lots
- improved rail transit
- carpooling
- vanpooling
- preferential parking for ride-sharing vehicles
- bus service improvements

Measures for Cleaner Vehicles

- inspection and maintenance of motor vehicles

Measures to Reduce Congestion-Related Emissions

- traffic flow improvements
- on-street parking restrictions
- reduction of extended idling
- encouragement of bicycling

Measures to Reduce Automobile Use

- residential permit parking

Other Measures

- land use management
- public education campaign

Table 3 provides comparative data for each of the above measures.

On the pages following the summary table each of the measures selected for implementation is discussed in greater detail. The present status and future commitments for the measure are described, and the results of the RAQTF work session ratings are presented.

The assumptions and methodology used to estimate the reduction of hydrocarbons can be found in Volume III: Technical Documentation. Due to the lack of a sound methodology, no rigorous attempt was made to estimate the social and economic impact of the candidate control measures. However, informed opinion voiced by participants of the RAQTF work session concerning these impacts is summarized in Appendix B, Results from RAQTF Questionnaire.

Table 3

SUMMARY OF TRANSPORTATION CONTROL MEASURES

		park-and-ride lots	**improved rail transit**	**carpooling**	**vanpooling**	**preferential parking for ridesharing**	**bus service improvements**	**inspection and maintenance**
Commitments and Studies		Construct at least 300 new park-and-ride spaces per year	Construct rapid transit line from downtown to Reisterstown Rd. Plaza Study rail transit line from downtown to Cockeysville Apply for design funds for rapid transit line from Reisterstown Road Plaza to Owings Mills Improve commuter railroad service	Increased public awareness Employer incentives Increased survey and matching efforts	Increased public awareness Reduce costs Employer incentives	Employer provision of preferred parking for car- and vanpools Continue City preferential parking program on downtown lots	Feeder bus for rapid transit Express buses to new Park-and-Ride lots Annapolis-Baltimore express bus Scheduling improvements Assorted local jurisdiction improvements	Establish motor vehicle IM program by 1982
Costs thru 1987	Total Costs	$14,000,000	$918,850,000	$1,800,000	$900,000	Not estimated	Not estimated	Supported by inspection fees
	Source of Funds	FHWA, UMTA	UMTA, MDOT	FHWA, MDOT	COMPUTERIDE	FHWA, Baltimore City, Employers	MTA, Local Jurisdictions	Motor vehicle owners
	Responsibility	SHA, MTA, Local Jurisdictions	MTA	VANGO, COMPUTERIDE	Large Employers	Baltimore City, Employers, COMPUTERIDE, VANGO		State
RAQTF ranking		1	4	9	8	7	3	6
Metric tons of HC reduction	**1982**	0.10	0.12	0.32	0.05	Not estimated	0.03	1.95
	1987	0.07	0.11	0.23	0.04	Not estimated	0.01	5.59

Table 3

SUMMARY OF TRANSPORTATION CONTROL MEASURES (cont.)

		traffic flow improvements	**on street parking restrictions**	**reduction of extended idling**	**encouragement of bicycling**	**residential permit parking**	**land use management**	**public education campaign**
Commitments and Studies		Implement traffic flow improvements in TIP	Continue ongoing programs	Right turn on red in effect since July 1978 Promote public awareness	Develop programs to promote bicycle use Continue/consider basic [illegible] improve- [illegible] bicy- [illegible] ore County and regional parking facilities projects Consider cyclist and motorist education programs New bikeways	Consider Baltimore City permit parking system	Baltimore County Interim Development Control Act Anne Arundel County Growth Management Program Carroll County Agricultural Zoning District State of Maryland Agricultural Land Preservation Program	Promotion of transportation controls Wider distribution of information Coordinated promotional efforts
Costs thru 1987	Total Costs	$75,800,000	Not Estimated	Not estimated	Not estimated	Not estimated	Not estimated	To be estimated
	Source of Funds	FHWA, MDOT	FHWA, MDOT	EPA	FHWA, MDOT, Local Jurisdictions	Baltimore City	State, Local Jurisdictions	EPA, FHWA, UMTA, DOE
	Responsibility	Local Jurisdictions	Local Jurisdictions	State, RPC, Local Jurisdictions	SHA, Local Jurisdictions	Baltimore City	State, Local Jurisdictions	MDOT, DHMH, RPC, Local Jurisdictions
RAQTF ranking		10	19	2	16	18	15	Not rated
Metric tons of HC reduction	**1982**	Not estimated	Not estimated	0.09	0.05	Not estimated	0.31	Impact included in other measures
	1987	Not estimated	Not estimated	0.04	0.04	Not estimated	0.25	

INCENTIVES FOR HIGH-OCCUPANCY VEHICLES

PARK-AND-RIDE LOTS

Park-and-ride lots are fringe or corridor parking facilities provided with express transit service or designed as meeting places for carpools and vanpools. This strategy, which is primarily CBD-oriented, is designed to encourage commuters to use transit and other ridesharing alternatives. Typically, low-occupancy autos are driven from outlying origins to a collection point where the drivers transfer to either public transit or higher occupancy private vehicles and continue to their destination. Consequently, there are reductions in vehicle miles of travel (VMT), traffic congestion, energy consumption, and air pollution.

A regional Park-and-Ride Committee was established in 1977 to improve and increase programming of park-and-ride lots. This committee evolved from recommendations contained in the transportation system management element of the region's transportation plan. The committee's purpose is to establish a regionally coordinated program for developing park-and-ride lots. In July 1978 it produced a set of proposed park-and-ride lots for the region.

The State Highway Administration (SHA) and the Mass Transit Administration (MTA) have assumed the major responsibility for implementing park-and-ride lots in the Baltimore metropolitan area. In July 1972, the MTA began express service during weekday rush hours from two Baltimore County lots located near the Beltway to the Baltimore CBD.

One of the lots, the 40 West Park-and-Ride, is located at the Westview Cinema, 8.7 miles from the CBD. An average of 175 cars park there daily; as a result, the 40 West Park-and-Ride reduces VMT by 1,512 miles daily. The second lot, the Eastern Park-and-Ride, is located across from the Eastpoint Shopping Center, which is also 8.7 miles from the CBD. With an average daily patronage of 138 cars, the Eastern Park-and-Ride reduces VMT by 806 miles daily.

In 1974 service was started at two lots located in Baltimore City. In January of that year, a section of the Memorial Stadium parking lot was designated for use as a ridesharing lot. This lot is located four miles from the CBD, along the route of the existing express bus service from Baynesville to the CBD. During off-peak hours, regular transit service is provided to and from the lot. Currently, a daily average of 100 cars use the lot, reducing VMT by 309 vehicle miles daily. The Stadium Park-and-Ride generated between 120 and 160 new transit riders who had previously commuted by automobile.

In March of 1974, a park-and-ride lot opened at Pimlico Race Track. This lot is 7.2 miles from the CBD, with express bus service to the CBD via the Jones Falls Expressway throughout the day. During the first month, an average of 25 cars parked at the lot daily. The number of cars steadily increased to the current average of 400 cars daily. The Pimlico lot reduces VMT by a minimum of 2,313 miles daily.

In February of 1974, park-and-ride service from a third Baltimore County lot was inaugurated. The service is operated from the Sacred Heart Church parking lot in the Glyndon area. This facility provides service to a growing suburban community and was a direct result of community interest in providing a more efficient transit service. Express transit service is provided by a single bus inbound in the morning and a single bus outbound in the evening. Regular bus service to the lot is available during the off-peak hours every 30 minutes. The Glyndon lot is located 22.5 miles from the Baltimore CBD and averages 30 cars daily. It has reduced VMT by 840 miles daily.

The Providence Road Park-and-Ride lot opened in November 1976. This lot is adjacent to Exit 28 of the Baltimore Beltway, 17 miles from the CBD via the Jones Falls Expressway. In addition to CBD trips, service is provided to the Social Security Administration in Woodlawn and to Johns Hopkins Hospital. Express bus service operates from the Providence Park-and-Ride all day. Averaging 237 cars daily, the lot reduces VMT by 2,959 miles daily.

A third park-and-ride lot in Baltimore City, the Gardenville Park-and-Ride, began operation in October 1977. This MTA lot, which accommodates 90 cars, is located approximately eight miles from the CBD. Both express and local bus service are provided. The Gardenville lot reduces VMT by 1,400 miles daily.

In addition to the existing lots, ridesharing lots near I-83 in Lutherville and Timonium and at I-83 and Mt. Carmel Road are now in the project design state. These lots will be served by express buses, with the potential for future coordination with the proposed North Transit Line. The Lutherville lot, 13.5 miles north of the CBD at York Road and Ridgely, will have a capacity of 170 cars. The Timonium lot is also 13.5 miles north of the CBD; this lot will eventually provide approximately 1,000 spaces. Transit service has also been proposed for lots under design at I-695 and Hammonds Ferry Road in Anne Arundel County and I-695 at Wilkens Avenue in Baltimore County. Three additional ridesharing lots in the north corridor, at Ridervale, Ruxton, and Falls Road are now being studied.

The Interstate Division for Baltimore City (IDBC) is in the design stages of development for a 525-space park-and-ride lot near the future I-83/I-95 interchange in East Baltimore. The MTA will provide both local and express service to the CBD for persons who use this facility. Baltimore City has also scheduled a lot for construction this year at Hanover and Potee Streets. The lot is approximately 3 miles from the CBD and will have a capacity of 185 cars. The MTA will provide express service during peak hours, as an addition to the regular local service.

In addition to park-and-ride lots served by transit, "park-and-pool" lots for carpools and vanpools are being developed throughout the region. For example, SHA has developed two lots in Harford County, a 30-auto facility on Mountain Road (MD 152) south of Belair Road (US 1) and a 200-space lot off I-95 at Maryland 152. A 56-space lot has recently been constructed at I-83 and Middletown Road in Baltimore County. An additional eight ridesharing lots are currently under construction or programmed for construction in FY 1979 in Anne Arundel, Harford, and Howard Counties.

While the establishment of park-and-ride lots has proven to be an extremely effective control strategy for reducing VMT, this strategy is not quite as effective in reducing emission of pollutants. Since the greatest proportion of hydrocarbons are produced at the beginning of a trip before a motor reaches its normal operating temperature, the key to reducing emissions is to reduce trips, not trip length.

However, the region is committed to providing at least 300 new park-and-ride spaces each year between now and 1982, at an annual cost of about $350,000. A total of 22 lots are currently programmed or under construction, while 17 additional lots are being studied for future implementation. These park-and-ride lots are shown in Figure 3 and Tables 4-9. The programmed lots would provide more than 4,600 spaces and an estimated VMT savings of 81,000 per day. The lots under study would provide more than 2,000 spaces and save 45,000 VMT per day.

It is estimated that park-and-ride lots could reduce hydrocarbons by .10 metric ton on a typical summer morning in 1982 and .07 metric ton in 1987. At the Regional Air Quality Task Force work session this measure was rated first by the participants. Ninety-eight percent of the respondents supported the measure, and no one opposed it.

Figure 3

REGIONAL PARK-AND-RIDE LOTS

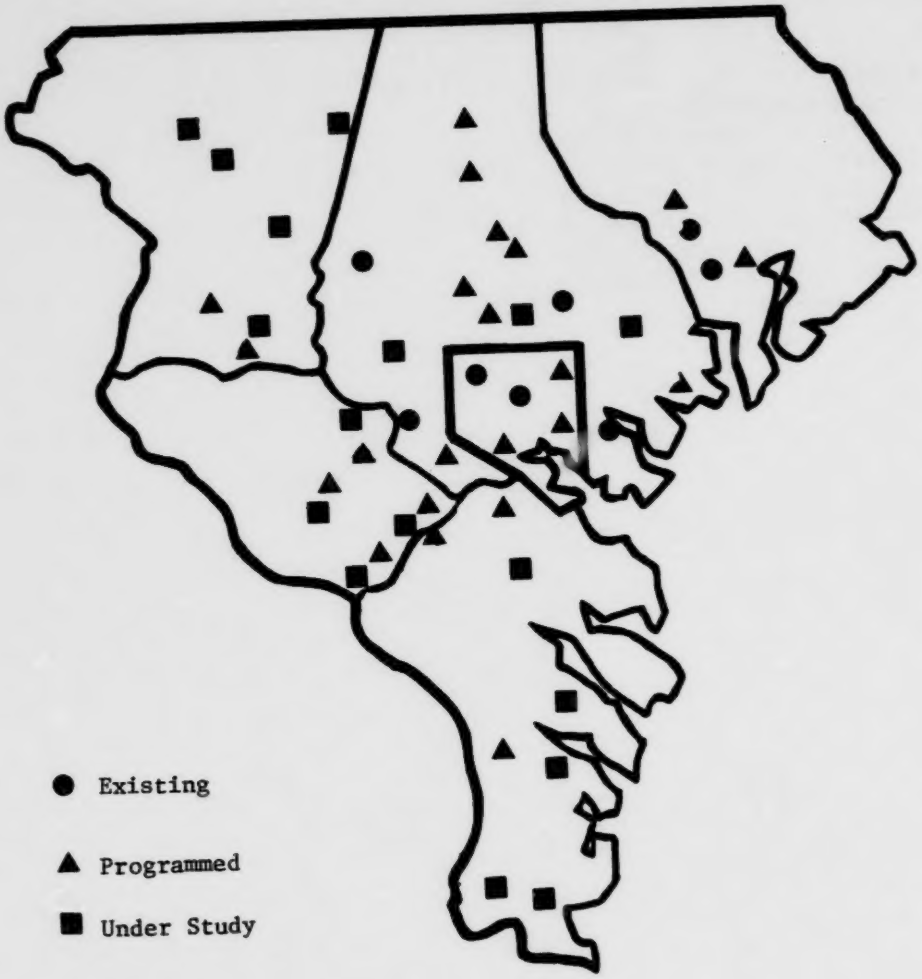

● Existing
▲ Programmed
■ Under Study

Table 4

BALTIMORE CITY PARK-AND-RIDE LOTS

PROGRAMMED/UNDER CONSTRUCTION*

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
I-83/I-95	1,103	525	2,900
Hanover/Potee	336	185	730
Gardenville	100	90	1,400
		TOTAL	5,030

*includes lots opened since August 1977

Table 5

ANNE ARUNDEL COUNTY PARK-AND-RIDE LOTS

PROGRAMMED/UNDER CONSTRUCTION

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
I-695/Hammonds Ferry Road	30	175	1,580
MD 176/MD 295	20	120	2,250
MD 424/US 50	32	70	2,250
		TOTAL	6,080

UNDER STUDY

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
MD 3 Corridor	2	25	500
MD 4/MD 258	16	40	1,150*
MD 214 W. of MD 2	16	40	1,420*
MD 258/South County	16	40	1,420*
MD 178/MD 450	LEASE	150	6,370*
		TOTAL	10,860

*measured to Washington, D.C.

Table 6

BALTIMORE COUNTY PARK-AND-RIDE LOTS

PROGRAMMED/UNDER CONSTRUCTION*

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
I-83/Middletown Road		56	2,450
I-83/Timonium	1,770	1,000	22,390
I-83/Lutherville	490	170	3,450
I-83/Mt. Carmel	225	130	4,070
I-695/Wilkens Avenue	57	35	310
I-83/Ruxton Road	175	70	790
I-83/Falls Road	970	1,400	20,460
MD 150/Glenn L. Martin Airport	250	180	3,380
		TOTAL	57,300

UNDER STUDY

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
MD 26/Brenbrook	290	540	8,250
Ridervale (Brookside Lane off Bellona)	218	350	4,980
US 1 N. of Joppa Road	160	300	5,110
		TOTAL	18,340

*includes lots opened since August 1977

Table 7

CARROLL COUNTY PARK-AND-POOL LOTS

PROGRAMMED/UNDER CONSTRUCTION

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
MD 26/MD 97	13	24	1,020
MD 851/MD 32	15	40	1,560
		TOTAL	2,580

UNDER STUDY

US 140/MD 91	2	15	530
MD 31 S. of MD 97	10	20	990
MD 32 S. of MD 26	LEASE	95	3,380
MD 88 E. of MD 30	LEASE	35	1,490
US 140/Gorsuch Rd.	LEASE	25	1,150
		TOTAL	7,540

Table 8

HARFORD COUNTY PARK-AND-POOL LOTS

PROGRAMMED/UNDER CONSTRUCTION*

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
MD 152/N. of 147	48	100	2,860
I-95/MD 24	16	40	1,280
		TOTAL	4,140

*includes lots opened since August 1977

Table 9

HOWARD COUNTY PARK-AND-RIDE LOTS

PROGRAMMED/UNDER CONSTRUCTION

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
US 1/Annapolis Junction Road	28	40	1,280*
US 29/Owen Brown	78	100	3,210
US 29/MD 103	22	50	1,280
Elkridge Commuter Rail	25	25	300
		TOTAL	6,070

UNDER STUDY

FACILITY	COST ($1000's)	SPACES	ESTIMATED DAILY VMT REDUCTION
US 1/MD 100	31	165	3,100
US 29/Allview Drive	12	40	1,420*
US 1/Whiskey Bottom Road	LEASE	50	1,430*
US 40/Chatham Mall	LEASE	100	2,220
		TOTAL	8,170

*measured to Washington, D.C.

IMPROVED RAIL TRANSIT

The recently completed Baltimore Region Phase II Transit Study has developed recommended improvements for both rail transit and commuter rail operations in the Baltimore Region. The study recommends implementation of rail transit facilities in the region's northwest and north travel corridors. Commuter rail recommendations consist of upgrading facilities and service between Penn Station and Odenton in Anne Arundel County, and between Penn Station and Havre de Grace in Harford County.

Development of the recommended transit facilities will produce benefits for both the region and specific areas and groups of people. These benefits include:

- Increased mobility for segments of the population dependent on transit, particularly the elderly, the young, and the poor.
- Enhanced access to major employment centers.
- Reduction in the cost of operating the existing bus system by substituting more efficient rapid transit facilities.
- Creation of new jobs needed to build, operate, and maintain the new facilities.
- An increase in the reliability and comfort of transit facilities.
- Savings for transit system users who otherwise would probably own and use more automobiles.
- A slight reduction in automobile use that also reduces regional air pollution and energy use.
- Use of fixed-guideway transit lines as tools for planning development and redevelopment.

Phase I, Section A of the regional rail transit system is currently under construction. This section of rapid rail line runs from the CBD to Reisterstown Road Plaza in northwest Baltimore. The Phase II Transit Study recommendations include the following additions:

- Northwest Extension (Section B). This rapid rail line would be a 5.5 mile extension of Phase I, Section A. It would run entirely at grade from the current terminus at Reisterstown Road Plaza to Owings Mills in Baltimore County. The Northwest Extension is expected to increase transit system patronage by 3.4 million riders annually.
- North Line. The 16-mile North Line will run from the CBD to Hunt Valley Industrial Park in Baltimore County, with service to Towson. The entire segment would be at grade and would utilize light rail vehicles. The

> North Line could increase transit system patronage by 4.4 million riders annually and reduce the annual transit subsidy by 1 percent.

The recommended commuter rail improvements consist of 22 miles of new track with overhead electrification between Penn Station and Havre de Grace and 11 miles of new track and electrification between Penn Station and Odenton. It would also be necessary to schedule rail freight movements outside periods of peak commuting.

The implementation of rail transit facilities in the northwest and north corridors has been endorsed by the Transportation Steering Committee. A combined Environmental Impact Statement for the Northwest Expressway and the Northwest Rail Extension has been completed and approved. Further, the Urban Mass Transportation Administration (UMTA) has indicated that this project is exempt from the new Alternatives Analysis planning requirements. The region is committed to completing the final design of this project subject to approval by the Joint Legislative Mass Transit Oversight Committee. A preliminary engineering study of the North Line was completed in 1976.

Planning for the Northwest Extension of the Phase I line has been completed; funds are programmed to complete alternatives analysis studies for the North Line during FY 1979. No funds are committed beyond alternatives analysis. The necessary funds, however, are programmed in the current MDOT Consolidated Transportation Program. Implementation of the recommended rail transit improvements should reduce VMT and emissions by providing a high level of transit service to the Baltimore CBD and other major activity centers in the region.

In addition to the recommended rail transit improvements, air quality in the Baltimore Region should also benefit from implementation of the Downtown People Mover (DPM) system. The DPM will provide intermodal connection between existing surface transit and the rail transit system over a 1.67 mile loop of double track. Construction of the DPM is contingent upon receipt of Federal funds. The City is committed to developing detailed economic analyses to establish more reliable cost estimates for the project.

It is estimated that rail transit improvements could reduce hydrocarbons by .12 metric ton in 1982 and by .11 metric ton in 1987. This measure was ranked fourth out of 26 possible candidate measures at the recent RAQTF-sponsored work sessions. Ninety-eight percent of the participants supported this measure, and only 2 percent were opposed to it.

CARPOOLING

Carpooling is one of the many forms of ridesharing--an activity that encourages people with similar destinations and similar origins to share their travel mode. Carpooling helps to reduce emission of pollutants because it reduces vehicle trips as well as VMT. Since 1974, carpooling activities in the Baltimore Region have been coordinated by the COMPUTERIDE program. COMPUTERIDE is a joint ridesharing effort sponsored by the Maryland Department of Transportation/Mass Transit Administration, Baltimore City, and the Regional Planning Council.

COMPUTERIDE has conducted 131 initial employer surveys and 242 follow-up surveys from FY 1973 to FY 1978. During this time, a total of 354,735 survey forms have been distributed at major firms and industrial parks where more than 500 people are employed. Of this number, 171,960 were for initial surveys and 182,775 were for follow-up surveys. Carpool matches have been established for 49,705 commuters--25,720 matches during the initial surveys and 23,985 during the follow-up surveys.

It is estimated that the regional carpool program could reduce daily hydrocarbons by .32 metric ton in 1982 and .23 metric ton in 1987. To achieve this level of effectiveness, COMPUTERIDE would have to establish 1,500 new carpools annually. In pursuit of that goal, COMPUTERIDE will:

- increase the public's awareness of carpooling;
- develop employer incentives for carpools; and
- increase the extent and effectiveness of its survey and carpool matching programs.

At the recent RAQTF work session carpooling was rated ninth out of 26 candidate control measures. Approximately 86 percent of the respondents were supportive of carpooling and none were opposed.

VANPOOLING

This form of ridesharing activity is similar to carpooling except that 8-15 passenger vans are used instead of automobiles. These vans are usually owned or leased by the employer, although there have been instances where employee groups or individual employees were responsible for obtaining vans. Passenger fees are structured to cover the operating and amortization costs of the vehicle.

In 1977 a nonprofit corporation was established to guarantee and administer a standardized vanpool leasing program. This nonprofit corporation is named VANGO and is supported by a combination of state and Federal funds. VANGO is responsible for the following tasks:

- develop a marketing program aimed at management and another aimed at employees;
- develop a comprehensive media campaign;
- continue signing new vanpool leases;
- obtain and operate demonstration vans;
- settle expired and terminated leases as needed;
- expand the VANGO marketing territory;
- broaden the original VANGO concept;
- monitor and evaluate the ongoing program; and
- encourage ridesharing in general.

VANGO's goal is to establish 50-100 vanpools statewide each year, with the primary emphasis in the Baltimore and Washington metropolitan areas. It is estimated that if VANGO attains this goal, by 1982 the amount of hydrocarbons emitted in the Baltimore Region on a typical summer morning could be reduced by .05 metric ton. The estimated amount of hydrocarbon reduction on a typical summer morning in 1987 would be .04 metric ton. About 83 percent of the respondents at the recent RAQTF work session were supportive of vanpooling; only 2 percent were opposed. This control measure was ranked eighth out of 26 candidate measures.

Figures 4-6 illustrate the major employers in the region currently participating in the ridesharing program or to be contacted.

Figure 4

SUBURBAN EMPLOYERS
in the Ridesharing Program

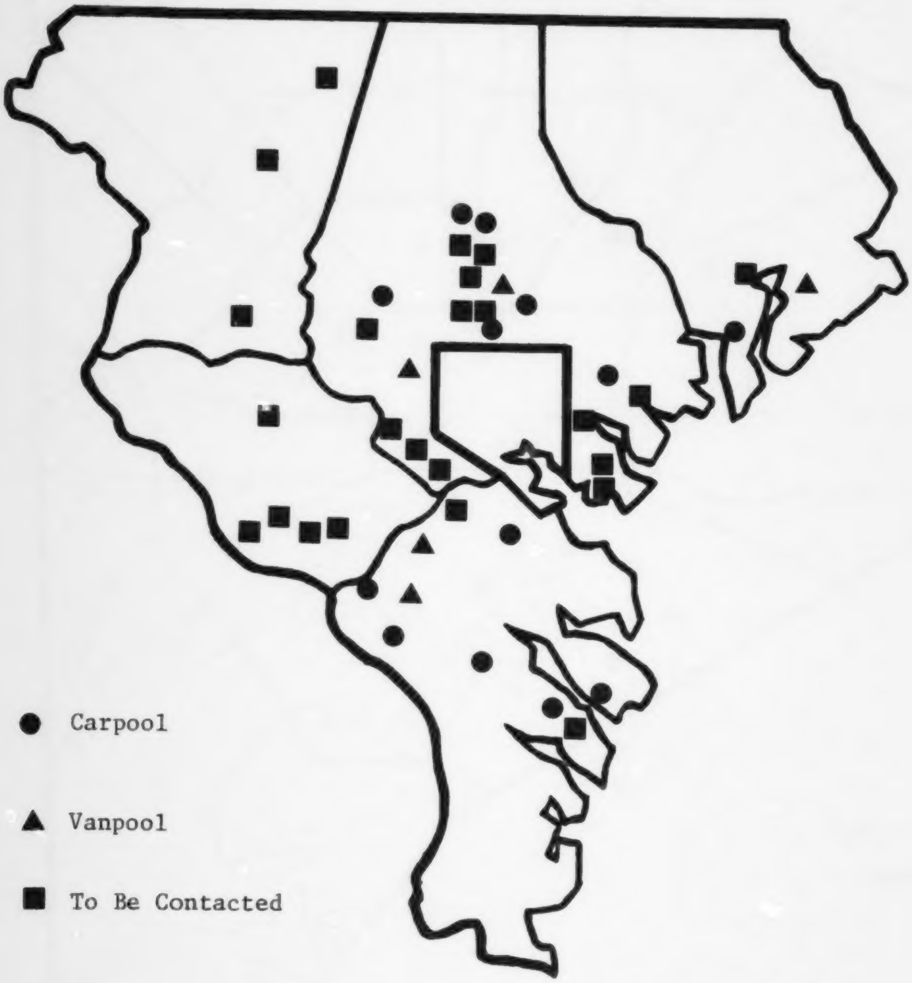

● Carpool
▲ Vanpool
■ To Be Contacted

Figure 5

BALTIMORE CITY EMPLOYERS
in the Ridesharing Program

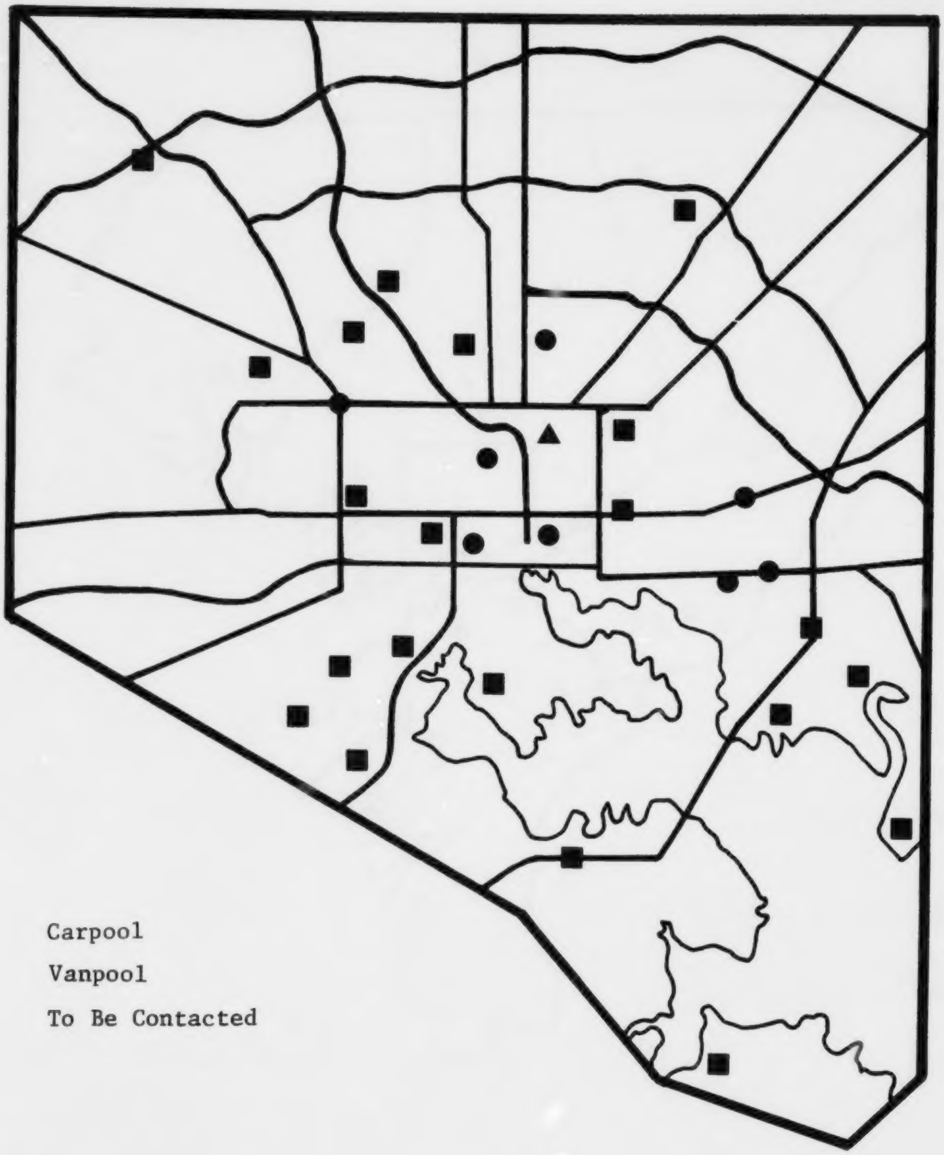
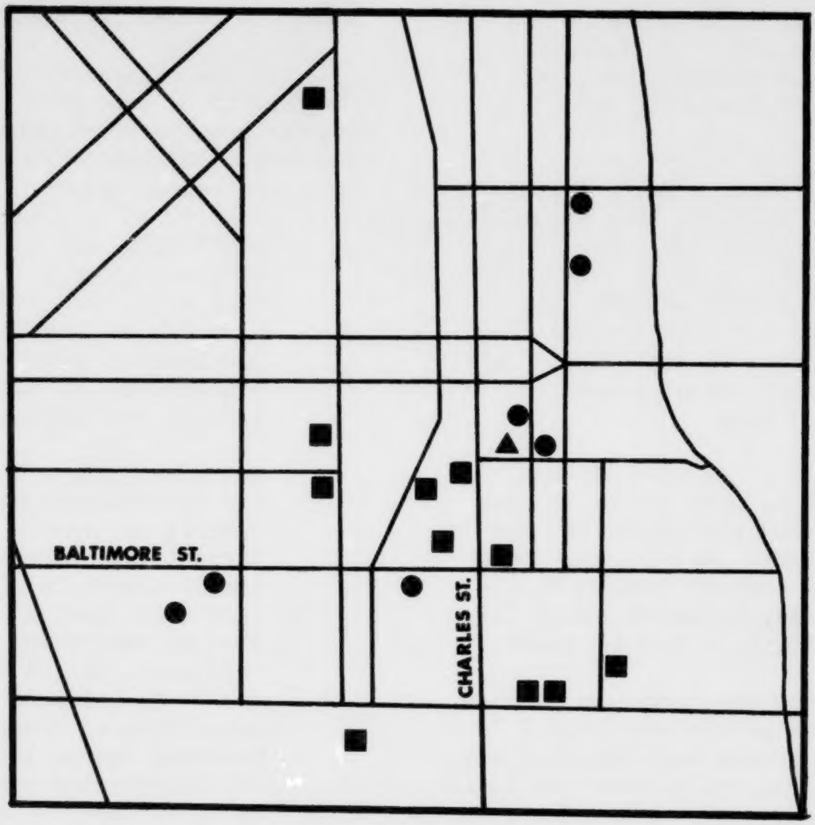

Carpool
Vanpool
To Be Contacted

Figure 6

DOWNTOWN EMPLOYERS
in the Ridesharing Program


BALTIMORE ST.
CHARLES ST.

● Carpool

▲ Vanpool

■ To Be Contacted

PREFERENTIAL PARKING FOR RIDESHARING VEHICLES

Preferential parking is an incentive to ridesharing. It consists of providing easily accessible, guaranteed parking spaces, often at reduced rates, for carpools and vanpools in areas where it is difficult to find parking. This measure can be implemented by suburban employers, as well as in the CBD and other dense activity centers.

Baltimore City began a Preferential Carpool Lot Program in 1975, when a total of 57 parking spaces were reserved for carpools at two municipal parking lots in the Inner Harbor area. Anyone driving into the City with at least two passengers four days a week is eligible to apply for a permit that entitles the carpool to park at one of the municipal lots.

The program has since been expanded to include over 500 parking spaces in five municipal lots located throughout the Central Business District. Despite the increase in supply of carpool parking facilities, there is a lengthy waiting list for those who want to obtain a Carpool Permit.

In 1977 a survey was conducted of permit holders on three of the six carpool lots. The results of the survey indicate that the development of the carpool parking facilities has led to the creation of a significant number of new carpools and that the majority of new carpoolers are diverted from private lower occupancy automobiles. It is estimated that over 200 new carpools have been formed because of the lots, with a resulting reduction of 1,500 VMT per day.

The parking meter rates on the lots were recently increased by an average of 6¢ per hour. This increase was implemented in part to dissuade existing carpools from switching from privately owned garages to take advantage of the lower rates at the carpool parking lots. As a result, it is expected that there will be more parking spaces available for newly formed carpools.

The use of preferential parking programs as an incentive to stimulate greater amounts of ridesharing will continue. The following actions will be undertaken by 1982:

- COMPUTERIDE and VANGO staff will encourage all large employers (1,000 or more employees) to provide parking preference programs in employee lots for carpool and vanpool vehicles; and
- Baltimore City will continue its carpool/vanpool preference program in its temporary metered lots. Although the number of spaces in these facilities will fluctuate with the pace of demolition and redevelopment, the City will endeavor to maintain the present proportion of reserved to unreserved spaces (35% reserved for ridesharing vehicles), with no fewer than 300 spaces available at any time.

Preferential parking programs were ranked seventh out of 26 candidate control measures by participants at the Regional Air Quality Task Force work session. This measure was supported by 90 percent of the participants and opposed by only 5 percent. The potential reduction of hydrocarbons was not estimated for this measure.

BUS SERVICE IMPROVEMENTS

Bus service improvements include a range of activities that enable transit operators to provide better, more frequent, and more versatile bus service. These types of improvements are necessary if transit is to become an attractive mode choice for persons who commute by auto.

Bus service improvements help to decrease auto use by increasing bus ridership, presumably by encouraging people to change from driving their own cars to riding the bus. They are beneficial to school children, the elderly, and other transit dependents and to some businesses. Fortunately, many bus service improvements are operational in nature and tend to be relatively inexpensive.

The Mass Transit Administration (MTA) has an ongoing program of service improvements that includes a bus replacement program, providing express bus service to park-and-ride lots, erecting bus shelters, improving fare collection methods, improving bus scheduling, and establishing a passenger information system. The MTA has recently established new express bus service between Annapolis and Baltimore and will provide feeder bus service to the region's future rapid transit lines. Other ways of improving bus transit service are being investigated. For example, a High Occupancy Vehicle (HOV) Preference Study was initiated in 1978 as a joint venture of the City of Baltimore and the MTA. The purpose of this study is to examine the travel time and reliability of existing bus transit routes in Baltimore and to identify problems and feasible solutions.

One solution being studied is the provision of additional exclusive bus lanes. However, the primary perspective of the study is transit performance, with an emphasis upon the formulation of innovative solutions that deal with operational problems, such as dwell time at stops and turning movements. It is anticipated that the HOV Study will result in a wide variety of recommendations for both capital and non-capital projects, possibly including bus stop and route modifications, exclusive bus lanes or streets, preemptive signalization, improved scheduling, and transit terminals.

Transit operators outside of the MTA's service area are also committed to improving their bus service. For example, to insure that its residents are provided with adequate public transportation, the City of Annapolis has recently taken over the Arundel Bus Company and is now providing local transit service. In Howard County, the Columbia Association and the county are providing local bus service in the Columbia-Ellicott City area and plan to improve service by purchasing new buses and erecting bus shelters.

Improved bus service could reduce the amount of hydrocarbons on a typical July morning by .03 metric ton in 1982 and .01 metric ton in 1987. At the recent air quality work sessions, bus service improvements were ranked third out of 26 candidate measures. This measure was supported by 92 percent of the participants and opposed by only 2 percent.

MEASURES FOR CLEANER VEHICLES

INSPECTION AND MAINTENANCE

This transportation control measure requires that emission control equipment on motor vehicles be inspected periodically to ensure that it is functioning properly. Inspection and Maintenance (I/M) is the most effective of the 26 Candidate Control measures that were examined in the Baltimore Region. The Clean Air Act requires that any plan that provides for attainment of the national air quality standards after 1982 include a program or schedule for implementing I/M. This program or schedule must be endorsed and committed to by the Governor.

The Inspection and Maintenance Subcommittee of the Regional Air Quality Task Force has developed a thirteen point resolution for the establishment of a statewide I/M program. This resolution has been endorsed by the RAQTF and will be forwarded to the Governor and the Maryland General Assembly to obtain the necessary commitments. The recommended specifications of the resolution are:

- All motor vehicles under 8500 pounds GVW registered in the State of Maryland will be required to undergo annual emissions inspection beginning no later than January 1, 1982. Consideration will be given to the I/M of all vehicles with a GVW of greater than 8500 pounds.
- Motor vehicles failing to meet established standards after January 1, 1983, will be required to undergo maintenance necessary to achieve these standards and to pass a reinspection. An initial demonstration period of one year for voluntary compliance is suggested to familiarize motorists and operators with the program.
- Inspections will be designed to check pollutant emission levels with respect to standards established by the State.
- Inspection fee will be borne by the vehicle owner and will include one free retest, for cases when the vehicle fails the initial inspection*. This fee should not exceed a reasonable upper limit established by State Law and should be set so as to cover the program costs. The program will thereby be self-supporting.
- Emissions inspections will be conducted at inspection stations operated by a contractor to the State. This contractor will be selected through approved, standard contractor selection procedures.
- Contract operations will be supervised by the State, who will provide for quality control measures, such as routine calibration and inspection of all equipment and auditing of inspection results. In addition, the State

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*Consideration will be given to acquiring equipment which will pinpoint the specific mechanical failures which need to be corrected before the owner returns for reinspection.

will be responsible for scheduling inspections in such a manner as to ensure a steady flow of motorists to the stations.

- Inspection stations should be located within easy access to the public and in such manner that every resident of the affected jurisdictions can reach a station within a reasonable time. Fifteen minutes driving distance should be viewed as a goal in the urban area.
- Although the recommended program calls for emission inspections of light and medium duty vehicles, inspection lanes should be designed so that they can accommodate heavy duty vehicles and facilities for safety-oriented inspections at some future date.
- The program should provide for repair cost limits, that is, maximum amounts that vehicle owners can be required to spend for maintenance on vehicles that fail inspections. These limits would be based on the value of the car. Vehicles that fail upon retest would be granted a waiver if the owner has spent the specified repair cost limits.
- It is suggested that the Maryland Department of Education make schools in the State aware of the need for additional qualified auto mechanics that will result from implementation of an I/M Program.
- If an operator of twenty-five or more vehicles establishes his own inspection and maintenance program capable of meeting all criteria established by the State enforcement agency, then the operator shall be exempted from having inspections conducted at designated state inspection stations. The designated State enforcement agency shall be responsible for monitoring such exemptions.
- Provisions should be made for monitoring emissions reductions attributable to the program. Such monitoring should not be carried out by the operator of the program.
- Enabling legislation should contain a sunset clause that will require active assent by the General Assembly to continue the program after a period of five years.

Implementation of the recommended Inspection and Maintenance program could reduce hydrocarbon emissions on a typical July morning in 1982 by 1.95 metric tons. In 1987 the I/M program could reduce hydrocarbon emissions by 5.59 metric tons. These reductions assume that the other recommended control measures will also be implemented. This measure was ranked sixth out of 26 control measures at the recent work session sponsored by the RAQTF. Inspection and Maintenance was supported by 90 percent of the participants at the RAQTF work session and opposed by only 7 percent.

MEASURES TO REDUCE CONGESTION-RELATED EMISSIONS

TRAFFIC FLOW IMPROVEMENTS

Traffic flow improvements increase average vehicle speeds and reduce stop and start driving. As a result, some automobile emissions are reduced because cars that travel faster with fewer stops tend to produce lower levels of hydrocarbons and carbon monoxide.

Most of the roadway systems in the Baltimore metropolitan area have been upgraded through the use of channelization, one-way street patterns, computerized control of intersections, computerized signing systems, and other traffic control improvements. Empirical results in several cities indicate that implementation of a coordinated signal light system can --by itself--improve travel times by 40 percent. Traffic flow improvements also tend to reduce accidents and noise. Traffic flow improvements can generally be classified into three broad program categories: (1) area-wide planning studies, such as TOPICS (studies that identify projects for increasing capacity, maintaining traffic flow, and enhancing safety on existing roadways); (2) programs of continual review and evaluation of generally independent traffic problem locations; and (3) opportunistic traffic operations improvements initiated through planning and design of major capital construction or reconstruction projects.

In Baltimore City, for example, 33 projects were recommended for implementation over a five-year period as a result of the TOPICS Study. The recommended City-wide projects included installation of a new traffic signal control system, replacement and rehabilitation of intersection signals, improvement of curb-lane capacities, and installation of advance street signs. Site specific projects, such as intersection improvements, route segment improvements, construction of left-turn lanes, and pedestrian overpasses were also recommended. The majority of the traffic operation improvements recommended in the City TOPICS Plan have been implemented or programmed for implementation.

Other Baltimore City efforts to improve traffic operations and relieve safety hazards have included detailed engineering studies that recommended replacing the existing traffic signal control system with a more responsive system using a high-speed digital-process computer. In 1975, work began on the installation of the system, which has the capacity of controlling over 1,000 intersections when fully implemented. Currently, approximately 240 intersections are being controlled by the new digital computer, and intersections are being added to the system at a rate of approximately 15 per week.

A study of traffic surveillance and control systems reviewed current and projected traffic problems on the Jones Falls Expressway (I-83) and recommended the installation of a traffic surveillance and control system that could be tied into the new signal control system. To date, detectors have been installed on parts of the Jones Falls Expressway, and variable message signs, funded by the Federal Highway

Administration at a cost of $1.5 million, have been installed and will be operational in 1978. In addition, such freeway surveillance and control measures as police patrol, emergency telephones, and a freeway patrol vehicle to observe traffic conditions and assist motorists have been instituted.

Over the next three years, the jurisdictions in the Baltimore Region are committed to providing the level of funding for traffic flow improvements shown in Table 10.

Up to about thirty miles per hour, increased speeds caused by traffic flow improvements tend to produce increased roadway capacity. Since increases in roadway capacity tend to generate greater utilization of the affected roadway, it is possible that certain traffic flow improvement could increase auto trips and the emission of pollutants. Due to time and resource constraints, the regional planning process was unable to estimate the impact of traffic flow improvements upon air quality. However at the recent RAQTF work session this measure was ranked tenth out of the 26 candidate control measures. Seventy-eight percent of the participants supported this measure and 12 percent were opposed.

Table 10

PROGRAMMED FUNDING FOR TRAFFIC FLOW IMPROVEMENTS

Fiscal Years 1979-1981

	Anne Arundel	Baltimore City	Baltimore County	Carroll County	Harford County	Howard County
TOPICS/TRAFFIC ENGINEERING	$ 1,068,000	$ 2,944,000	$6,304,000	$2,105,000	$603,000	$ 545,000
BARRIERS/CHANNELIZATION	107,000	13,147,000	5,830,000	-	-	-
SIGNALS/MESSAGE SIGNS	-	380,000	2,740,000	-	-	242,000
INTERSECTIONS	18,190,000	1,200,000	225,000	246,000	-	9,420,000
TOTAL	$19,365,000	$17,671,000	$15,108,000	$2,351,000	$603,000	$10,207,000

ON-STREET PARKING RESTRICTIONS

On-street parking restrictions either reduce or eliminate the amount of curb-side parking. Implementation of this measure increases the through capacity of a street and allows vehicles to move faster.

Over twenty years ago, every major arterial street within and serving the Baltimore City Central Business District was posted with peak-period parking restrictions for the express purpose of ensuring the efficient use of road space. The region's other major activity centers also use this technique to improve the flow of traffic during peak periods. Improved traffic flows reduce the amount of stop and go driving, lessening the emission of certain pollutants. This measure will continue to be implemented as needed in the Baltimore Region. The impact of on-street parking restrictions on air quality was not estimated.

This measure was ranked nineteenth out of 26 control measures. Seventy-eight percent of the participants at the recent RAQTF workshops were supportive of this measure and 12 percent were opposed.

REDUCTION OF EXTENDED IDLING OF MOTOR VEHICLES

Regional efforts to control the extended idling of motor vehicles consist of the new right-turn-on-red law and a proposed strong public education program. The new right-turn-on-red law provides both air quality and energy benefits. By reducing the number of minutes a vehicle must idle uselessly at traffic lights and therefore reducing the amount of total travel time, less fuel is consumed and the resulting emissions are reduced.

Maryland's new right-turn-red law is not without disadvantages. It has been suggested that right-turn-on-red will increase the number of motor vehicle accidents. Bicyclists and pedestrians are concerned that this new law will make travel more difficult for them.

Crucial to the success of reducing extended idling is the education of the public. First, the seriousness of the region's air quality problem must be vividly presented. Second, the public must realize that they can reduce mobile emissions and save energy just by turning the engine off any time they expect to be idling for 48 seconds or more.

The local jurisdictions in the Baltimore Region have taken a conservative approach to implementing right-turn-on-red at intersections. Right-turn-on-red is currently prohibited at nearly 45 percent of the signalized intersections in the Baltimore Region. In Baltimore City, prohibitions exist at 55 percent of the signalized intersections, while Baltimore County has right-turn-on-red prohibitions at 25 percent of its intersections. As more comparative data are obtained on the accident rate at intersections where right-turn-on-red is permitted, it is conceivable that the local jurisdictions will repeal some of the currently prohibited turning movements.

This measure was ranked second out of 26 candidate control measures by participants at the RAQTF work sessions. Reduction of extended idling of motor vehicles was supported by 96 percent of the respondents and opposed by only 2 percent. It is estimated that implementation of this measure could reduce hydrocarbon emissions during a typical summer morning by .09 metric ton in 1982 and by .04 metric ton in 1987.

ENCOURAGEMENT OF BICYCLING

Encouragement of bicycling for the purpose of improved air quality must be primarily encouragement of adult utilitarian cycling--that is, the use of bicycles by adults for trips with a definite purpose and destination. The major goal is to substitute bicycle trips for automobile trips on a large scale. Automobile trips of less than five or six miles are the most attractive candidates for bicycle substitution.

One of the greatest advantages of measures to encourage bicycle use is their comparatively low cost. Bicycle-related physical improvements do not require large capital expenditures. Furthermore, the less capital-intensive measures, such as general roadway improvements and education, are probably the most effective in encouraging bicycle use.

A second advantage of encouraging bicycle use is its relationship to other air quality measures. Anything that improves air quality or reduces traffic congestion also improves cycling conditions and thereby encourages bicycle use. Certain specific measures are especially favorable to cycling. For example, flexible work hours make it possible for bicycle commuters to avoid peak traffic congestion and the worst of summer heat and winter darkness. Encouraging bicycle use can also increase the effectiveness of other measures. In the case of park-and-ride lots, for example, bicycles can be substituted for automobiles as the feeder mode, thereby decreasing the localized pollution associated with such lots.

In addition to improved air quality, increased bicycle use also offers other benefits to the region and the individual. When bicycle trips are substituted for automobile trips, energy is saved. Since bicycles operate silently, they do not contribute to noise pollution. On an individual level, using the bicycle for trips to work and other utilitarian trips offers an opportunity to combine physical exercise with necessary travel.

A number of regional and local bicycle-related programs are currently in operation, but none of them has as its primary goal increasing the level of adult utilitarian cycling. Although encouraging bicycle use is at least a secondary objective of most of the existing programs, their effect is more often to benefit those already cycling. If bicycle use is to increase enough to affect air quality, a serious program providing encouragement, assistance, and incentives for cyclists is needed. The presently committed program includes the following elements:

Promotion of bicycle use: An active, extensive program promoting the use of bicycles for short trips, especially commuting trips, is necessary. The clean air public education campaign will include promotion of the opportunities for commuting and making other short trips by bicycle. In addition, MDOT, the Regional Bikeways Study, and the local jurisdictions will develop expanded promotional programs. The possibility of preparing a handbook for bicycle commuters as part of one of those programs is under study.

Basic roadway improvements: Local jurisdictions will consider the possibility of including bicycle-related improvements in new and reconstructed roadways and of replacing unsafe grates and shifting lane stripes to create wide curb lanes on existing roads. Baltimore County will continue its current program of basic roadway improvements, spending $50,000 on grate replacement during fiscal 1979. The State Highway Administration will continue to consider bicycle-related improvements for all new and reconstructed roadways.

Secure bicycle parking: The Regional Bikeway Study will spend $10,000 during fiscal 1979 on a pilot project to install bicycle lockers and racks at selected commuter, commercial, and recreational locations and to study the effect of improved parking facilities on bicycle usage. Baltimore County is spending $30,000 during fiscal 1979 on bicycle parking at county libraries and in business revitalization areas. Secure bicycle racks are also being installed in some of the county's public parking garages. Bicycle lockers will be provided at all of the region's park-and-ride lots and rapid transit stations.

Bicycle safety education: Bicycle safety education for all age groups must be expanded to give potential cyclists the skills they need to ride in traffic and to acquaint motorists with the needs and rights of cyclists. The clean air public education campaign will include safety-related messages for cyclists and motorists. MDOT, RPC, and local jurisdictions will consider ways of providing bicycle safety instruction to a wide segment of the adult population and to all school children.

Designation or construction of selected bikeways: Bike lanes, routes, or paths will be provided to allow bicycle access to areas where it is now impossible, to provide extra room for cyclists in areas where the necessary right-of-way exists, and to increase recreational opportunities. A bicycle-pedestrian bridge over Route 29 in Howard County and additions to Columbia's systems of bikeways are already programmed for fiscal 1979. A bike lane is included in the present widening of Dulaney Valley Road between the Beltway and Pot Spring Road in Baltimore County. The bikeways identified as priority routes in the Regional Bikeways Plan will be constructed, as available funds permit.

It is estimated that implementation of the above bicycling encouragement measures could reduce regional work trip VMT by .25 percent. As a result, hydrocarbon emissions during a typical summer morning could be reduced by .05 metric ton in 1982 and by .04 metric ton in 1987. This control measure was ranked sixteenth out of 26 candidate measures at the June RAQTF work sessions. It was supported by 66 percent of the participants and opposed by 19 percent.

MEASURES TO REDUCE AUTOMOBILE USE

RESIDENTIAL PERMIT PARKING

Preferential parking programs for residents of selected areas have significant potential as a parking management tool. Such programs can encourage the use of alternatives to private automobile commuting by (1) providing convenient on-street parking space during work hours for residents who leave their cars at home; and (2) reducing the availability of free parking spaces for commuters to nearby employment facilities, thereby encouraging the use of mass transit, carpools, and market rate off-street parking.

A pilot residential permit parking plan in Baltimore City, implemented in the Oakenshawe neighborhood in April 1978, has successfully achieved the above objectives. A further study indicating the feasibility of such a plan in the residential area adjacent to Morgan State University was completed in May 1978.

In order to extend the availability of residential permit parking to other neighborhoods throughout the City, a proposed ordinance has been introduced that sets forth appropriate procedures and guidelines. Generally, the proposal provides for the implementation of a permit parking plan whenever such a plan (a) is a feasible and efficient solution to an existing parking problem, and (b) is desired by a consensus of the residents affected. The proposed ordinance (Bill #1691) is currently awaiting action by the City Council.

Potential hydrocarbon reductions were not estimated for this control measure. At the RAQTF-sponsored work sessions 55 percent of the participants supported this measure and 17 percent were opposed. This measure has not been considered for implementation in any jurisdiction other than Baltimore City.

OTHER MEASURES

LAND USE MANAGEMENT MEASURES

How growth takes place in future years will have a major effect on travel patterns and motor vehicle emissions. A dispersed, scattered pattern of subdivisions in rural areas results in longer auto trips and makes transit service to these developments extremely difficult.

On the other hand, orderly growth that takes place in sequence with the availability of adequate public services results in less VMT growth, lower emissions levels, and greater potential for transit service. This type of growth strategy also directs new investment and vigor into older communities in the region, saves farmland and forests, reduces gasoline consumption, and offers other benefits. It is, in fact, the basic development strategy contained in the region's 1977 General Development Plan.

Anne Arundel County has recently (July 17, 1978) revised its General Development Plan and adopted a "Growth Management Ordinance", to be included in Title 13 of the Anne Arundel County Code (1967 amended). The revised Anne Arundel County General Development Plan proposes that the best overall strategy for the location of new growth is to improve upon and add to existing communities with careful consideration for maintaining their individual integrity. One of the specific goals of the proposed plan is to "establish a development pattern which will improve air quality and reduce noise levels".

Baltimore County recently (April 16, 1977) enacted a new section 22-15.1 of the County Code, entitled "Master Plan--Interim Development Control Pending Plan Completion and Adoption". Its legislative purpose is to ensure the integrity of the proposed Master Plan and implementing code revisions during the period while the Planning Board and County Council are further considering the Master Plan and needed implementing decisions by the Council. As part of this act, the Interim Development Control Map divided the County into five areas:

1. Urbanized Area - presently served by water and sewer lines or with extensions programmed in the first two years of the 1975 Comprehensive Water and Sewerage Plan.

2. Urbanizing Area - presently unserved by sewer and water, but where extensions are included within the Urban/Rural Demarcation Line as shown on the 1975 Comprehensive Water and Sewerage Plan.

3. Non-Urban Area - presently outside the Urban/Rural Demarcation Line.

4. Environmental Protection Area - areas that have been identified and mapped as environmentally sensitive land in which development should not occur (such as wetlands, tidelands, steep slopes, areas subject to severe erosion and areas within the 100-year flood plain).

During the 18-month period covered by the Interim Development Control ordinance, development is to be allowed only if standards of adequacy of public facilities, which are expressly written into the ordinance, are met by the proposed development.

The Baltimore County Growth Management Program is presently exploring three alternative future development pattern strategies. Detailed evaluations are being made of their fiscal, environmental, public service, facilities, and other consequences. Upon selection of a proposed alternative, a detailed Growth Management Plan will be prepared, including the necessary implementing mechanisms.

The Maryland General Assembly has recently enacted legislation establishing an agricultural land preservation program for the State of Maryland. The legislation became effective in July 1977 and funding was first made available in July 1978. This program was enacted after several years of study by the General Assembly's Committee on the Preservation of Agricultural Land.

There are two basic thrusts to the Program: (1) a voluntary agricultural district program, and (2) an agricultural easement purchase program, both administered by the Maryland Agricultural Land Preservation Foundation in cooperation with local governments. The law authorizes the creation of voluntary districts where commercial subdividing is restricted and agricultural and woodland activities are not. The Program was initially funded by the 1978 General Assembly, with an appropriation of $4 million in Program Open Space funds.

On April 26, 1978, the Carroll County Commissioners enacted a new Article within the Carroll County Farming Ordinance entitled "'A' Agricultural District". This amendment recognizes both the significance of farmland to the County and the fact that a substantial portion of the residential development in the County has previously taken place in the Agricultural District.

This development has had the effect of taking agricultural land out of production and creating a demand for public facilities and services in areas where provision of such additional services and facilities is not consistent with County policy. Agriculture is established as the preferred use in the new Agricultural District and the subdivision of land for residential purposes within the Agricultural District is severely restricted. County policy is to encourage development in other areas identified in the Carroll County Master Plan.

It is estimated that implementation of the aforementioned land use management measures could reduce the amount of regional hydrocarbons emitted on a typical summer morning by .31 metric ton in 1982 and .25 metric ton in 1987. Land use management measures were ranked fifteenth out of the 26 control measures at the RAQTF workshop. Seventy-six percent of the workshop participants were in support of this transportation control strategy and 22 percent were opposed.

PUBLIC EDUCATION CAMPAIGN

In examining the available data, members of the public who have attended the Regional Air Quality Task Force (RAQTF) meetings have consistently pointed out that some of the most effective control measures are those that require the general public to make basic changes in their attitude toward and use of the automobile. As a result, the RAQTF sees a need for an informational/promotional campaign to help the public understand and accept the changes and tradeoffs that will be necessary in their personal lives and activities if the region is to meet the national air quality health standards.

The proposed campaign would promote an awareness of the regional air quality problems, the effects of air pollution upon human health, and transportation alternatives that can help to reduce air pollution. By coordinating the informational and promotional efforts of the many heath and transportation agencies in the Baltimore Region, implementation of this measure will:

- integrate air quality concerns into the promotional campaigns of the agencies involved;
- encourage a more vigorous promotion of transportation measures that have a positive impact on air quality;
- provide more efficient and widespread distribution of information;
- provide for more efficient use of agency promotional funds.

Potential joint projects among the various agencies might include seminars and conferences, common use of mass media facilities, or periodically planned events that highlight a particular theme but provide an opportunity to focus on other areas of the air quality/transportation issue.

Some activities of this nature are already underway, including the following:

- Public participation in the development of the TCP is being coordinated jointly by the staff of the RPC and the State Air Quality Programs, with cooperation from the jurisdictions;
- A national ridesharing conference September 17-20 was sponsored by Baltimore City, the Regional Planning Council, the State of Maryland, and the U.S. Department of Transportation, Federal Highway Administration;
- An EPA funded community workshop on the Clean Air Act, held July 31, was organized by a group of people representing the Baltimore Environmental Center, the RPC, the State Air Quality Programs, and various community groups;
- Contacts have been made with the broadcast media to discuss inclusion of air quality information as part of regular weather reports.

IV. MEASURES FOR STUDY

IV. MEASURES FOR STUDY

In addition to the fourteen measures selected for implementation, twelve measures have been selected for study between now and 1982. As a result of staff and RAQTF evaluation, it was felt that further study was needed before these measures could be recommended for implementation.

The measures selected for study are:

Incentives for High Occupancy Vehicles

- exclusive lanes for buses and ridesharing vehicles
- reduced transit fares

Measures for Cleaner Vehicles

- cleaner fleet vehicles
- retrofit of emission control devices
- cold start emission reduction programs

Measures to Reduce Congestion-Related Emissions

- staggered or flexible work hours
- encouragement of moped use

Measures to Reduce Automobile Use

- increased parking fees (2)
- increased fuel taxes
- auto-free zones
- road tolls

Other Measures

- episodic vehicle controls

The measures selected for study are described in more detail in the following pages.

INCENTIVES FOR HIGH-OCCUPANCY VEHICLES

EXCLUSIVE LANES FOR BUSES AND RIDESHARING

This measure designates street lanes for the exclusive use of buses and other high-occupancy vehicles during peak travel periods. The creation of exclusive bus and ridesharing lanes is intended to improve speeds and minimize interference from other traffic. Depending on local conditions, general experience indicates that an exclusive lane can save one and one-half to six and one-half minutes per mile. In areas where the volume of buses is sufficient to use a major portion of the lane's capacity, the operation tends to be self-enforcing. However, when the lane carries a small number of buses per hour, private vehicles often use the lane and enforcement problems result.

It is generally agreed that exclusive lanes are applicable and functional on streets which have approximately 25 buses per hour operating during the peak hour. At the same time it is also commonly assumed that successful exclusive lane operation requires at least two other lanes of traffic in the same direction.

Baltimore City has utilized exclusive bus lanes on several major streets for years. These lanes are indicated by signs restricting the curb lane during the peak period to bus use and right turn movements. This program has not been totally successful because of inadequate enforcement; turning movements and illegal parking often infringe on the free flow of bus movements.

In 1975 the MTA and the City's Department of Transit and Traffic jointly undertook an "Exclusive Bus Lane Study". The study was in response to the 1973 Transportation Control Plan and was designed to determined the impact of exclusive lanes in reducing air pollution emissions.

The results of this study were not particularly encouraging in the corridor that was examined. Transit ridership and trip time were not significantly improved by the imposition of the exclusive lane. The study served to reaffirm the conclusion that for exclusive lanes to operate efficiently, at least two additional lanes in the same direction are required.

Some regions have implemented exclusive lanes for buses and other high-occupancy vehicles at toll plazas. When combined with preferential pricing arrangements these measures provide two important incentives--lower costs, faster travel times--that encourage ridesharing activities. In the Baltimore Region there are toll plazas at the Baltimore Harbor Tunnel, the Francis Scott Key Bridge, I-95 in Harford County, and the Susquehanna River Bridge. At each of these facilities, however, the capacity at the toll plazas far exceeds the capacity of the approach roadways. In order to provide preferential treatment to high-occupancy vehicles, the roadway capacity would have to be expanded.

Recent studies by the Pratt and ERT firms and the regional transportation staff indicate that exclusive lanes on certain streets could reduce VMT by .18 percent. This reduction in vehicular travel could reduce hydrocarbons on a typical July morning by .04 metric ton in 1982 and .02 metric ton in 1987. Participants at the June RAQTF work session ranked this measure twelfth out of 26 control measures. It received support of 75 percent of the respondents and was opposed by only 9 percent.

While exclusive lanes have not been completely successful in the Baltimore area, further study is needed to determine ways of making them more effective. Of particular importance is a need to examine the potential of various configurations of the exclusive lane concpet, such as contra-flow lanes, exclusive lanes that prohibit right turn movements, exclusive lanes other than curb lanes, etc. This measure will be studied and considered for implementation in the 1982 TCP submission.

REDUCED TRANSIT FARES

Reduced transit fares could encourage more commuters to use public transit. Increased transit patronage could reduce some of the region's transportation problems—traffic congestion, air pollution, and energy consumption.

A reduced transit fare plan introduced in Allentown, Pennsylvania, has had considerable success in promoting transit ridership. A reduced transit fare program has never been used in the Baltimore Region. However, the MTA has had a reduced off-peak fare program since March 1, 1976. Its purpose is to attract additional transit riders during the off-peak hours to more effectively utilize available bus capacity.

Reduced transit fares were one of the measures evaluated in the recent Pratt/ERT Air Quality Study. The Pratt/ERT Study estimates that a 10¢ fare reduction could reduce vehicle miles of travel (VMT) by .69 percent. This could cause the amount of hydrocarbons emitted on a typical Friday morning in July to be reduced by .14 metric ton in 1982 and .08 metric ton in 1987. Reduced transit fares received support from 62 percent of the participants at the recent Regional Air Quality Task Force work sessions. Sixteen percent of the respondents were opposed to reducing transit fares.

MEASURES FOR CLEANER VEHICLES

CLEANER FLEET VEHICLES

A cleaner fleet vehicle program would involve converting traditional gasoline powered engines to diesel or other alternative fuels or retrofitting them with pollution control equipment. Providing the necessary fleet maintenance to keep the vehicles in compliance with EPA emission requirements also contributes to cleaner fleet vehicles.

This measure is relatively simple to implement, but the initial costs would be high. However, the savings realized from lowered fuel consumption and the more efficient operation of the fleet would more than offset initial costs. Many interstate carriers and mass transit operators have already realized the benefits of diesel engines for their fleets.

Baltimore City currently owns and operates a fleet of approximately 3,000 vehicles, including automobiles, motorcycles, heavy-duty trucks, and light-duty trucks. To maximize the life of these vehicles and to ensure that auto emission levels comply with EPA regulations, all departments are required to adhere to a regular maintenance schedule, with maintenance performed by trained mechanics at several City-operated garages.

The City automobile fleet of approximately 1,500 cars is replaced at the rate of 300 to 500 cars per year. This rate of replacement ensures the existence of a good operating fleet and provides the City with automobiles which closely comply with EPA's current auto-related emission standards.

In recent years, the City has considered replacing a portion of its auto fleet with electric-powered vehicles. However, staff research indicates that such vehicles are not feasible at the present time due to:

(1) higher capital and operating costs than gasoline-powered cars, (2) limited cruising distance, and (3) topographical maneuvering constraints. Nevertheless, the City will continue to monitor improvements in operating efficiency and reductions in costs of electrically powered vehicles. If the operating efficiency and costs are significantly improved, the City could switch to a fleet of electrically powered vehicles.

Programs to achieve cleaner fleet vehicle operations were well received by participants in the Regional Air Quality Task Force work sessions. This measure was ranked fifth out of 26 possible transportation control strategies.

The Regional Planning Council and its member jurisdictions intend to continue studying the possibilities for cleaner fleet vehicles. Schedules and commitments will be prepared for submission in the 1982 TCP.

RETROFIT OF EMISSION CONTROL DEVICES

The retrofit of emission control devices involves adding pollution control devices, such as catalytic converters, to vehicles not originally equipped with them. Implementation of a coordinated and well managed retrofit program could greatly reduce emissions. Many types of vehicles, such as trucks, that would not be subject to Maryland's initial inspection and maintenance law could be retrofitted to meet emissions standards.

It is estimated that a retrofit program could reduce hydrocarbon emissions on a typical July morning by 5.4 metric tons in 1982 and 1.5 metric tons in 1987. Retrofit did not fare well at the Regional Air Quality Task Force work sessions, where it ranked twenty-fourth out of 26 possible measures. However, it will be considered in the 1982 SIP submission.

COLD START EMISSION REDUCTION PROGRAMS

Programs to reduce motor vehicle emissions caused by extreme cold start conditions would involve education of the public to avoid long periods of engine idling. Evidence from research indicates that gasoline engines produce the highest levels of hydrocarbon and carbon monoxide emissions in the first several minutes after ignition. To control and limit these air pollutants, a well organized and convincing public education program must be initiated.

Many car owners idle cold engines to "warm them up". This phenomenon is especially evident during cold winter months. Both fuel use and air pollutants could be reduced at no cost to the owner by simply starting the engine and driving immediately. Public education and participation in transportation control planning can alter the public's attitude and perceptions about warming up auto engines.

This type of pollution reduction measure must achieve the cooperation of the general public to be effective. However, it was ranked fourteenth out of the 26 measures on the RAQTF questionnaire. Potential reductions of pollutants were not estimated for this measure. Cold start emission reduction will be studied for implementation in the 1982 SIP.

MEASURES TO REDUCE CONGESTION-RELATED EMISSIONS

STAGGERED OR FLEXIBLE WORK HOURS

Alternative work schedules (AWS) spread work-related peak travel demand over longer than usual intervals of time by changing employee arrival and departure times. The intervals of time change could range from several minutes to several hours. Alternative work schedules are easy to implement, and both public and private costs are minimal. Implementation of AWS on a regionwide basis could reduce congestion in certain areas, causing an increase in vehicular speeds and operating efficiency, which in turn would reduce hydrocarbon emissions.

The most widely used forms of alternative work schedules are staggered work hours and flexible work hours. Firms that use staggered work hours schedule several different employee starting and quitting times. For example, a firm could stagger its starting and quitting time by 15 minute intervals over a 45 minute span:

Original Schedule

9 a.m. to 5 p.m. (all 2,000 employees)

Staggered Hours Schedule

8:15 a.m. to 4:15 p.m. (500 employees)
8:30 a.m. to 4:30 p.m. (500 employees)
8:45 a.m. to 4:45 p.m. (500 employees)
9:00 a.m. to 5:00 p.m. (500 employees)

In this example, each shift would be faced with about 75% less congestion on elevators and at building and parking lot entrances.

A flexible work hours program allows employees to choose their work schedules according to personal preference. All employees, however, must work a specified number of hours, and all employees must be at work during certain hours of the day called "core" time. For example, a firm on flexible working hours could establish core time as 10 a.m. to 3 p.m. This means that all employees must be at work at 10 a.m. and no one can leave before 3. Employees at this hypothetical firm could arrive at work any time between 7 a.m. and 10 a.m. and leave any time between 3 p.m. and 6 p.m.

It has been estimated that morning peak hydrocarbon emissions in the Baltimore Region could be reduced by .75 metric ton in 1982 and by .45 metric ton in 1987 if all major employers (500 or more employees) implemented an AWS program. At the recent public work sessions, alternative work schedules were ranked fourteenth out of 26 measures by the participants. More than 75 percent of the participants supported this measure, while only 12 percent were opposed.

Because of its positive impacts upon employee morale, many firms in the region have already implemented some form of alternative work schedule. The Social Security Administration in Woodlawn is the largest employer in the region with an AWS program. The extent to which AWS are being used in the region is not known.

A study has recently been initiated to examine the potential for establishing a large-scale alternative work schedule program in the Baltimore Region. The AWS study should be completed as quickly as practicable and its findings and recommendations incorporated into the 1982 TCP Submission.

MEASURES TO ENCOURAGE MOPED USE

Increased use of mopeds has potential for reducing pollution, congestion, and energy consumption in much the same way as increased use of bicycles, without some of the inherent limitations of bicycles. Since riding a moped does not require physical exertion, they are useable over longer distances and by a wider segment of the population than bicycles.

However, there are some possible disadvantages associated with mopeds that are not associated with bicycles. Unlike bicycles, mopeds produce a certain amount of pollution and noise. The safety of mopeds has often been questioned, since they provide no more protection to riders than bicycles but are able to reach greater speeds. In addition, the legal status of moped riders is not entirely clear in such areas as use of bicycle facilities and insurance.

Mopeds are already being used for transportation by some people and their popularity seems to be increasing. Unfortunately, not very much is known about their safety or potential for improving air quality or about public reaction to them. On the RAQTF questionnaire they were rated together with bicycles, and it is impossible to differentiate the response to the two types of vehicle.

Further study will be done on the potential of mopeds for air quality improvement, problems associated with mopeds, and ways of encouraging moped use. Moped-related measures will be considered in some form for the 1982 SIP.

MEASURES TO REDUCE AUTOMOBILE USE

INCREASED PARKING FEES

Increased parking fees act as economic disincentives that discourage unnecessary automobile use. The TCP staff and the RAQTF have examined two types of increased parking costs: a CBD parking surcharge, and regionwide downtown-level parking charges.

The imposition of a $1 surcharge on existing parking charges in the CBD could reduce the emission of hydrocarbons by .16 metric ton in 1982 and .10 metric ton in 1987. A $2 parking surcharge in the CBD could reduce hydrocarbon emissions on a typical summer morning by .32 metric ton in 1982 and .19 metric ton in 1987.

The imposition of parking rates equivalent to those in effect in the Baltimore Central Business District on all-day parking in areas surrounding the Baltimore CBD and in selected outlying employment centers would be more effective because it has the potential to reduce a greater number of trips. It has been estimated that this strategy could reduce hydrocarbon emissions by .98 metric ton in 1982 and .58 metric ton in 1987. Both of these strategies received a fairly low ranking at the Regional Air Quality Task Force work sessions. Increased CBD level charges was ranked twentieth, and parking surcharges in outlying areas was ranked twenty-second. Further consideration and study will be scheduled for this measure.

INCREASED FUEL TAXES

This transportation control measure seeks to reduce auto use and thereby lower emissions by increasing the price that the consumer pays for gasoline. There are several potential benefits of an increase in fuel taxes; it could reduce energy consumption, provide an incentive for ridesharing and transit use, reduce trip making, increase State revenues and provide a potential source of funds for improving other modes of transportation.

However, there are also disadvantages associated with this measure. It has the potential of increasing inflation, creating a hardship for low income people who must use their automobile, and ultimately reducing State revenue if gasoline consumption were greatly curtailed. Furthermore, it is considered unpopular by the public and elected officials.

The specific proposal that was evaluated by the RAQTF and the TCP staff would increase the fuel tax by 20¢ per gallon. It is estimated that such an increase in the fuel tax could reduce the amount of hydrocarbons emitted on a typical summer morning by .31 metric ton in 1982 and .19 metric ton in 1987.

This measure was not favorably received at the public work session sponsored by the Regional Air Quality Task Force. Increased fuel taxes were ranked twenty-third out of 26 measures, reflecting the public's unwillingness to accept increased motor vehicle operating costs at the fuel pump. In an era of Proposition 13's it is unlikely that elected officials would approve of this control measure. However, consideration will be given to some form of increased fuel taxes in the 1982 SIP submission.

AUTO-FREE ZONES

Auto-free zones are areas where automobiles are prohibited. They improve the safety and movement of pedestrians while providing a pleasant environment for social interaction and commercial activities.

In the past, auto-free zones in the Baltimore Region have been used to revitalize older commercial districts through innovative design and coordination with public transit. Lexington Mall and Old Town Mall once had curb-side parking in front of businesses. In an effort to turn around the two declining areas, both were closed to vehicular traffic. Both malls exemplify a small scale approach to auto-free zones. However, to have an impact on air quality a much larger area would have to be cordoned off from vehicular traffic. Baltimore County has developed plans to create an auto-free zone in Towson.

This measure will be given more consideration before development of the 1982 control plan.

ROAD TOLLS

Differential rates at toll facilities could be used to discourage single occupancy vehicle trips by increasing the cost associated with auto use. As the cost of driving is increased, fewer people would drive. This, in turn, would lower regional VMT. Preferential treatment could be afforded to buses, carpools, and vanpools at bridges, tunnels, and highway toll collection facilities. Implementation of this measure could result in lowered emissions if used in coordination with other TCP strategies.

The primary facilities in the Baltimore Region where this technique could be used are the Baltimore Harbor Tunnel, the Francis Scott Key Bridge, I-95 in Harford County, and the Susquehanna River Bridge. Currently, these facilities provide reduced rates for commuters who purchase monthly passes. If this monthly reduction policy were limited to high-occupancy vehicles only, it could result in the reduction of peak-period volumes and emission of pollutants.

Institution of road tolls was not well received at the RAQTF-sponsored work sessions, where it was ranked twenty-fifth out of 26 possible measures. More study is needed to assess the feasibility and effectiveness of this measure.

OTHER MEASURES

EPISODIC VEHICLE CONTROLS

This measure restricts the number of motor vehicles allowed to operate on days that are forecasted to have high levels of pollution. Episodic vehicle control programs typically use license tag numbers to regulate vehicle use. On even-numbered days, vehicles with license tags that end in even numbers are allowed to operate, and an odd-numbered days, vehicles with license tags that end in odd numbers are allowed to operate.

The major problem involved in implementing this measure is the inability to forecast days of high pollution. However, more consideration will be given to this measure for the 1982 TCP revision.

V. MEASURES NOT RECOMMENDED FOR IMPLEMENTATION OR STUDY

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Only one measure has been rejected as not acceptable as a control strategy for the Baltimore metropolitan area. This measure--gas rationing--will not be studied or implemented.

GAS RATIONING

Fuel rationing could improve air quality because it reduces the amount of gasoline available for public use. Less gasoline means less vehicular travel, which means fewer pollutants are emitted. The reduction in travel would depend upon the stringency of the rationing program. To date, this measure has only been implemented during World War II. It would probably take another national emergency before public sentiment would allow this draconian measure to be implemented.

There are many problems involved with gas rationing. First, it would be ludicrous and probably impossible to implement gas rationing at the regional level. Even it it were implemented state-wide, it would lose its effectiveness unless neighboring states also implemented a rationing program. A black market situation could easily develop. Furthermore, considerable costs would be incurred in the administration of a rationing program.

While gas rationing is an extremely effective measure for reducing fuel use, it may not be quite as effective for reducing emissions. The reason is that gas rationing is more likely to cause auto users to reduce unnecessary trips as opposed to reducing essential trips. However, work trips, the largest portion of peak period morning travel, are essential trips and are unlikely to be reduced.

Gas rationing was ranked last of the 26 measures at the recent air quality work sessions sponsored by the Regional Air Quality Task Force. Only 18 percent of the participants were in support of a gas rationing program, while 67 percent were opposed to gas rationing as a control measure. Due to the lack of public support, the many implementation constraints, and its questionable effectiveness, the regional transportation planning process does not consider gas rationing a reasonably available control measure.

VI. GLOSSARY

GLOSSARY

Air Quality Control Region (AQCR): A region considered as a unit for air quality planning purposes. The Baltimore AQCR consists of Baltimore City, Baltimore County, Anne Arundel County, Harford County, Howard County, and Carroll County.

Air Quality Maintenance Plan (AQMP): The plan required in areas where, based on current emissions inventory and projected growth rate, national ambient air quality standards will be exceeded over a 10-year period. The AQMP is usually required to assure attainment as well as maintenance of the air quality standards, and thus contain control strategies to ensure that projected emissions are compatible with attainment and maintenance of the national standards.

Approvable SIP: A State Implementation Plan (SIP) which satisfies the requirements outlined by the Administrator of EPA in a memorandum dated February 24, 1978.

Attainment Area: An area that meets the air quality standards for a given pollutant. The same area can be attainment for one pollutant and non-attainment for another.

Carbon Monoxide (CO): An invisible, odorless, highly poisonous gas often produced from incomplete combustion in automobile engines.

Clean Air Act (CAA) as Amended August 1977: The key Federal air pollution law, P. L. 95-95, 91 Statute 685, 42 USC 7401 et seq.

Department of Health and Mental Hygiene (DHMH): Maryland state agency responsible for regulating stationary sources and for integrating stationary source control planning with the transportation control planning work being done by the Regional Planning Council.

Emission Control Device: A device installed on an engine, factory, or power plant that reduces the amount of pollutant emitted.

Emission Standard: A limit set for the amount of a given pollutant a particular factory, incinerator, motor vehicle, or power plant may discharge into the atmosphere.

Hydrocarbon (HC): Substances such as gasoline, paint thinner, and alcohol that are made of hydrogen and carbon. Hydrocarbons react with the air in the presence of sunlight to form photochemical oxidants.

Inversion: A state in which the air temperature increases with increasing altitude, holding cooler surface air down, along with its pollutants. (Normally, the air near the surface is warmer and it rises, causing pollutants to mix and disperse.)

Micrograms Per Cubic Meter ($\mu g/m^3$): A measure of the amount of pollutant. One microgram in one cubic meter is about the same as one-twentieth of one-billionth of a pound of pollutant in each cubic foot of air.

Mobile Source: Automobiles, buses, trucks, airplanes, etc.

National Ambient Air Quality Standards (NAAQS): Federal standards that set the maximum level for several pollutants. There are two types: "Primary" standards, which are calculated to protect human health, and "secondary" standards, which are calculated to protect public welfare (meaning plants, animals, buildings, and aesthetics, in addition to humans).

Nitrogen Oxides (NOx): Nitric oxide (NO), nitrogen dioxide (NO_2), and nitrogen trioxide (NO_3). These are gases formed by the high temperature combustion of atmospheric nitrogen, such as in the internal combustion engine. Early emission control devices often increased the emissions of nitrogen oxides in the process of reducing the emissions of carbon monoxide and hydrocarbons.

Non-Attainment Area: An area that violates air quality standards for a given pollutant. An area can be non-attainment for one pollutant and attainment for another.

Ozone (Oz): A pungent, highly poisonous gas, invisible in low concentrations. Ozone is the principal photochemical oxidant.

Particulates: Small suspended particles.

Parts Per Million (ppm): One gram of air pollutant for every million grams of air.

Photochemical Oxidants (Ox): The substances produced when hydrocarbons and nitrogen oxides combine with the air in the presence of sunshine (the primary photochemical oxidant is ozone).

Primary Standards: The levels of air quality necessary to prevent adverse health effects on humans.

Reasonably Available Control Measures (RACM): Reasonably available measures for the improvement of air quality. Their "reasonable availability" is to be determined on a case-by-case basis through the existing transportation policy decision apparatus, involving both EPA and DOT. The transportation measures listed in Section 108(f) of the Clean Air Act, as amended, provide an initial list of measures that are considered reasonably available for the purpose of analysis.

Regional Air Quality Task Force (RAQTF): An advisory committee to the Regional Planning Council made up of businessmen, environmentalists, government representatives, and interested citizens. The Task Force is charged with studying the Transportation Control Plan and recommending modifications.

Secondary Standards: The levels of air quality necessary to prevent adverse effects on plants, animals, buildings, and aesthetics.

Smog: Common name for photochemical oxidants.

State Implementation Plan (SIP): The plan that each state is required to develop under Section 110 of the Clean Air Act. If the state fails to submit an approvable plan, EPA is required to promulgate one for the state. The SIP must provide for the attainment and maintenance of the established air quality standards within the time set forth in the act.

Stationary Sources: Non-moving polluters, such as industry, dirt roads, grain loading facilities, dry cleaners, fires, etc.

Sulfur Oxides (SOx): Sulfur dioxide (SO_2) and sulfur trioxide (SO_3). These are invisible gases having a pungent odor that result from the burning of high sulfur fuels in industry, homes, and power plants. Sulfur oxides can cause eye irritation, can aggravate lung disease, and can damage plants, buildings, and metals. Sulfur oxides often react with water vapor or rain to form sulfuric acid.

Transportation Control Measure (TCM): Any measure directed toward reducing emission of air pollutants from transportation sources, such as reducing vehicle use, changing traffic flow patterns, decreasing emissions from motor vehicles, or increasing use of public transit.

Transportation Control Plan (TCP): That portion of the SIP that describes the transportation-air quality planning process and the transportation control measures applicable to each area.

APPENDIX A

- --RPC Resolution on TCP Development
- --Prospectus for Areawide Air Quality Planning in the Baltimore Region
- --Preliminary Assignment of Responsibilities
- --Governor's Certification

REGIONAL PLANNING COUNCIL
701 St. Paul Street
Baltimore, Maryland 21202

RESOLUTION

DESIGNATING THE REGIONAL PLANNING COUNCIL TO DEVELOP THE TRANSPORTATION CONTROL ELEMENT OF THE REVISED IMPLEMENTATION PLAN FOR THE BALTIMORE AIR QUALITY CONTROL REGION.

WHEREAS, the Clean Air Act, as amended by the Clean Air Act Amendments of 1977, P.L. 95-95, (hereinafter called the "Act"), requires that in certain areas which do not meet national ambient air quality standards (non-attainment areas), a revised transportation control element of the implementation plan must be prepared and the deadline for attaining national standards can be extended to 1982, or in certain circumstances 1987; and

WHEREAS, the Baltimore Region is such a non-attainment area because of excessive levels of photochemical oxidants and carbon monoxide and, therefore, is eligible to develop a revised transportation control element of the implementation plan and obtain the extension date for compliance with national standards; and

WHEREAS, Section 174 of the Act provides that within six months from enactment of the Act (i.e., February 7, 1978) the local governments in a non-attainment area may agree to designate an organization of local elected officials to prepare a revised plan and jointly determine with the state which elements of a revised plan will be planned for, implemented and enforced by the state, local governments and regional agencies; and

WHEREAS, the Regional Planning Council (hereinafter called the "Council") is an organization composed primarily of local elected officials which has gained experience in air quality and transportation planning; and

WHEREAS, it has been proposed that the Council be the designated agency with overall responsibility for developing and coordinating the above referred planning required by the Act through use of its existing policy structure; and

WHEREAS, the designation of the Council will assure a local/state/regional cooperative approach toward the planning, implementation or enforcement of the plan;

NOW, THEREFORE, BE IT RESOLVED BY THE Regional Planning Council, each of its local government representatives, acting on behalf of their respective local governments, as follows:

1. The Regional Planning Council be designated as the agency responsible for carrying out the transportation planning requirements of the Clean Air Act Amendments of 1977, in accordance with the process delineated in Attachment A which is made a part of this resolution;

2. The possible involvement of the Regional Planning Council, State and local governments in planning, implementation and enforcement of candidate methods for reducing emissions which are cited in Section 108 of the Act is shown in Attachment B which is made a part of this Resolution. It is understood that this assignment is strictly preliminary and subject to refinement and modification by the process delineated in Attachment A and does not represent a commitment by any party.

3. Copies of this Resolution shall be transmitted to the Governor of the State of Maryland and to the Administrator of the U.S. Environmental Protection Agency.

I HEREBY CERTIFY that the above Resolution was duly passed at the 166th meeting of the Regional Planning Council held on January 20, 1978.

January 20, 1978
Date

Frederick L. Dewberry
Frederick L. Dewberry
Executive Director

ATTACHMENT A

PROSPECTUS FOR AREAWIDE AIR QUALITY PLANNING IN THE BALTIMORE REGION

WHEREAS, Article 78D, Section 2, Annotated Code of Maryland created a regional planning area (herinafter referred to as "area") comprised of the City of Baltimore and the Counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard, which is the Baltimore Standard Metropolitan Statistical Area, as designated by the United States Office of Management and Budget; and

WHEREAS, Article 78D, Section 2, Annotated Code of Maryland, established the Regional Planning Council (hereinafter referred to as "RPC") for the area; and

WHEREAS, the Council membership is primarily comprised of elected officials of the City of Baltimore, and the Counties of Anne Arundel, Baltimore, Carroll, Harford, and Howard; and

WHEREAS, the area or portions thereof, have been identified as not meeting the national primary ambient air quality standards for photochemical oxidants and carbon monoxide; and

WHEREAS, Section 174 of the Clean Air Act Amendments of 1977 (hereinafter called the "Act") requires the development of a plan for the attainment of the Federal primary ambient air quality standards for photochemical oxidants; and

WHEREAS, Section 174 of the Act urges that, where feasible the organization designated to prepare the plan shall be the metropolitan planning organization designated to conduct the continuing, cooperative and comprehensive transportation planning process for the area (Section 134, Title 23, USC.); and

WHEREAS, Section 174 of the Act encourages the development of such a plan by an organization of elected officials of local governments designated by agreement of local governments in the affected area and certified by the State for this purpose; and

WHEREAS, the parties hereto recognize that the RPC has the capability of developing an areawide air quality implementation plan in concert with the local subdivisions and the State of Maryland; and

WHEREAS, the parties hereto are desirous of developing and implementing an areawide air quality implementation plan pursuant to Part D of the Act.

NOW, THEREFORE, IT IS AGREED:

1. FUNCTIONS

1.01 In concert with the member local governments and the State of Maryland, the RPC shall be responsible for the preparation of the transportation control element of the State Implementation Plan (SIP) for the Baltimore region and for the development of policies, programs, and other actions required for the achievement and maintenance of the Federal National ambient air quality standards for photochemical oxidants and carbon monoxide within the Baltimore Metropolitan Area.

1.02 In concert with the member local governments and the State of Maryland, the RPC shall be responsible for the development of the transportation control element of the implementation plan required under Section 172 of the Act for certification by the Governor of Maryland and for approval of the United States Environmental Protection Agency (EPA). In pursuance of its responsibility for the preparation of the plan or amendments thereto, as described in Section 1.03 following, the RPC shall approve a work program which will be coordinated with and incorporated in the Unified Transportation Planning Process for the Baltimore Region. This work program shall be developed to take cognizance of the air quality improvement activities currently being pursued or capable of being performed by the member local governments and the State of Maryland; and in this regard, RPC shall emphasize its role as the responsible agency for mediating issues among member governments and the State, and insuring that the transportation control element of the SIP is consistent with and complementary to the stationary source control elements of such plan.

1.03 The responsibilities of the RPC dealing with the development of transportation control measures as set forth in this Prospectus shall be delegated to the TSC by an appropriate resolution of the RPC, except for the functions of the RPC set forth in Section 3.01 of this Prospectus and except for those other functions, responsibilities or powers the delegation of which would constitute a violation of State or Federal laws or regulations.

1.04 (a) Staff and administrative support will be appointed or retained for the activities required pursuant to this agreement, in accordance with mutually agreed upon procedures and the work program developed as provided in Section 1.02 above. Contracts and administrative agreements will be formulated, as required, in furtherance of these planning activities. The Executive Director of the RPC and the Director of the UTPP shall be jointly responsible for the coordination and general supervision of the planning support staff. A project manager may be retained or appointed, and such person shall be qualified to and shall supervise the technical staff work, coordinate the work of any consultants and others and, with the assistance of the Regional Air Quality Task Force (Project Management Committee), will develop and maintain the work program for meeting Federal requirements for transportation control planning.

(b) MDOT shall prepare and submit necessary applications for funds from USDOT and the RPC shall prepare and submit necessary applications with the EPA. Grant applications shall be reflective of the work program described in sub-section (c) below. For EPA funds, the RPC, and for USDOT funds, the MDOT, shall receive, account for, disburse and otherwise manage funds from grants or contributions received in pursuance of applications or requests filed on its behalf, and within the established UTPP approved by the TSC, may pass through to appropriate State and/or local governments and agencies portions of such funds to perform such work elements in the program to be undertaken by them.

(c) The TSC shall approve an annual schedule of work to be accomplished as an element of the UTPP. Such schedule shall make explicit the actual work to be accomplished in the fiscal period for which the schedule is prepared. The work program and budget shall be formulated to avoid duplication and maximize available staff and other resources of the participating local governments and the State of Maryland.

2. AIR QUALITY AND TRANSPORTATION PLANNING COMMITTEE STRUCTURE

2.01 (a) The Transportation Steering Committee - The Transportation Steering Committee shall be expanded to include the Secretary of Health and Mental Hygiene or his designee.

(b) Functions - Its functions with respect to the preparation of this plan shall include, but not be limited to, the following:

(1) Preparation and approval of an annual schedule of work to be accomplished under the provisions of the Clean Air Act. The basic elements include, but are not limited to, the following: technical planning; transportation management; and considerations regarding regulatory controls, land use, and institutional arrangements.

(2) Review of areawide air quality implementation plans and programs including the approval or amendment of the transportation control elements of the plan as required under Section 172 of the Act.

(3) Certification to the RPC of all plans and programs designated under 2.01(b)(2) above. No transportation control plan shall be approved by the RPC without the TSC certification.

(4) The establishment of special committees.

2.02 Regional Air Quality Task Force

The RPC shall establish a RAQTF which shall provide advice and assistance to the RPC, the TSC, and to its special committees on a continuing basis. The RAQTF shall meet as often and at such times as shall enable it to provide comments and recommendations to the above bodies. The RAQTF shall include senior staff representatives from each of the member local governments, the local health departments, the Maryland Departments of Health and Mental Hygiene, Transportation, and State Planning, and other such agencies and individuals as the RPC may consider appropriate, including representation from the public at large.

3. INTERGOVERNMENTAL REQUIREMENTS AND PROCEDURES FOR PLAN APPROVAL AND ADOPTION

3.01 Upon its development by the TSC, a plan shall be first submitted to the member local governments for ratification by their respective governing bodies, as evidenced by statute, regulation, ordinance or other legally enforceable document. Upon ratification by the member local governments, the plan shall be certified by the TSC. The plan then shall receive a final review by the Regional Planning Council: and upon its approval the Regional Planning Council shall transmit the plan to the Governor of the State of Maryland for certification as required under Section 172 of the Act.

3.02 If any member local government fails to ratify a plan in accordance with Section 3.01 above, the representatives of that member government shall exercise the right to veto any portion of the plan relating to their jurisdiction or to facilities and programs operated by that jurisdiction. Any vetoed section shall be removed from the plan before it is certified to the RPC by the TSC.

3.03 Any State Agency representative to the TSC may exercise the right to veto any portion of the transportation control elements of the SIP which falls within its responsibility to implement, or any portion of the plan which abrogates the mandated authority of the State Agencies as established by State law. Any vetoed section of such plan shall be removed before certification by the TSC.

4. PUBLIC PARTICIPATION

4.01 The RPC shall provide for, encourage, and assist to the fullest extent practicable, active public participation throughout the planning process in accordance with applicable EPA regulations. Public participation activities shall be reported on annually as part of the areawide plan. All official meetings relating to this planning process shall be open to the public.

4.02 The RPC will develop appropriate mechanisms to contact interested and affected individuals and groups and to provide them with all available information at the earliest practicable time in the policy and plan formulation process. In accordance with EPA regulations regarding public participation, the RPC shall make appropriate arrangements for early consultation and exchange of views with interested or affected persons or organizations on the development or revision of plans, programs, or other significant actions prior to decision-making.

4.03 The RPC shall conduct public hearings, public meetings, or public workshops in accordance with policy established by the RPC and in accordance with applicable EPA regulations. The plan or any significant portion thereof, or the annual update, shall not be approved by the RPC for transmittal to the Governor until public hearings concerning said plan or amendments have been held at such times and places as shall assure adequate opportunity to be heard by officials, groups, associations, or individuals in all member jurisdictions. The RPC may hold its own hearing, or may join with the principal elected officials of member jurisdictions in holding hearings.

5. AMENDMENT

5.01 Any amendments to this Prospectus shall require the unanimous approval of the Regional Planning Council.

Attachment B

PRELIMINARY ASSIGNMENT OF RESPONSIBILITIES

Legend

(L,l) Local	
(R,r) Regional	Large case letters indicate a higher degree of responsibility for designated function.
(S,s) State	

CANDIDATE EPA METHODS WITH POSSIBLE RESPONSIBILITIES**

	CANDIDATE METHODS	PLANNING	IMPLEMENTATION	ENFORCEMENT
1	* Emission inspection and maintenance: motor vehicle	rS	S	SL
2	Vapor emissions: fuel transfer & storage	rS	S	Sl
3	* Improved public transit	RSl	S	SL
4	* Exclusive bus & carpool lanes & area-wide carpool programs	RSL	SL	n/a
5	Limitation of roads or areas for common carriers	RSL	SL	SL
6	* Long-range transit improvements	RS	S	n/a
7	* Control on-street parking	RLs	Ls	Ls
8	* Park & ride lots & fringe parking	RSL	Sl	n/a
9	* Limitation of roads or areas for pedestrian & non-vehicular use	RSL	SL	SL
10	* Employer participation in: carpooling, vanpooling, mass transit, bicycling and walking	Rsl	sRl	n/a
11	* Bicycle storage and lanes	RSL	SL	n/a
12	* Staggered work hours	R	RSL	n/a
13	Road use charges to discourage single occupancy vehicle use	RSL	SL	SL
14	Control extended idling of vehicles	RSL	SL	SL
15	* Improvements in traffic flow	RSL	SL	SL
16	Clean up or control fleet vehicle operations	rSL	SL	SL
17	Retrofit programs	rS	SL	S
18	Cold start emissions	rS	S	S

MAJOR PLANNING RESPONSIBILITIES

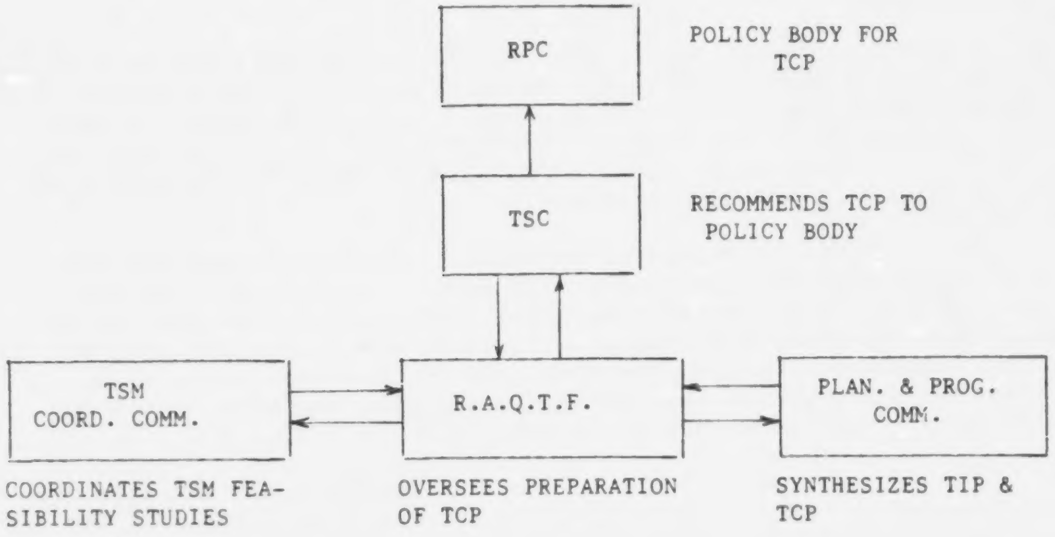
		MOBILE SOURCES	STATIONARY SOURCES	
			MAJOR	AREA
1	Emission Inventory	Rs	S	S
2	Air Quality Analysis			
	a. Socioeconomic forecasts	Rl	Rl	Rl
	b. VMT forecasts	R	n/a	n/a
	c. Emission forecasts	Rs	Sr	Sr
	d. Air quality simulation		*Sr	
3	Evaluatior & selection of control strategies	RSL	Srl	Srl

* Asterisk indicates candidate method for which, to some degree, analysis has already been conducted.

**Note: This assignment of responsibility is preliminary and subject to refinement and modification as necessary during the preparation of the Transportation Control Plan (TCP).

AREAWIDE AIR QUALITY PLANNING

STRUCTURE FOR PREPARING THE TRANSPORTATION CONTROL ELEMENT OF THE REVISED IMPLEMENTATION PLAN


RPC
POLICY BODY FOR TCP
TSC
RECOMMENDS TCP TO POLICY BODY
TSM COORD. COMM.
R.A.Q.T.F.
PLAN. & PROG. COMM.
COORDINATES TSM FEASIBILITY STUDIES
OVERSEES PREPARATION OF TCP
SYNTHESIZES TIP & TCP

STATE OF MARYLAND
EXECUTIVE DEPARTMENT
ANNAPOLIS, MARYLAND 21404

BLAIR LEE III
ACTING GOVERNOR

March 23, 1978

MAR 27 1978
REGIONAL PLANNING

Mr. Frederick L. Dewberry
Executive Director
Regional Planning Council
701 St. Paul Street
Baltimore, Maryland 21202

Dear Mr. Dewberry:

Pursuant to Section 174 of the Clean Air Act and your request of January 24, 1978, I have transmitted a letter to the Environmental Protection Agency, certifying the Regional Planning Council as the agency responsible for preparation of the transportation element of the revised implementation plan for photochemical oxidants and carbon monoxide for the Baltimore Region. A copy of this letter is attached.

As you know, the transportation control element is only a portion of the complete implementation plan for Baltimore. The plan will contain stationary source control measures including vapor controls for fuel transfer losses. These measures, including the Inspection/Maintenance measures, are primarily the responsibility of the State. In addition, you should understand that the State will be responsible for combining these two sections of the plan before final submission to the EPA.

I'm sure that you also are aware of the lengthy public hearing process required by federal regulations on the entire plan. Therefore, in order to meet the January 1, 1979 deadline established in the Clean Air Act, I am requesting that you transmit the transportation control element to the Department of Health and Mental Hygiene no later than September 30, 1978. I would also encourage you to coordinate your process with the Metropolitan Washington Region so that inconsistencies between the two regional plans can be avoided.

Sincerely,

Blair Lee

Blair Lee III
Acting Governor

March 23, 1978

Mr. Jack J. Schramm
Regional Administrator
U. S. Environmental Protection Agency
Region III - Curtis Building
Sixth and Walnut Streets
Philadelphia, Pennsylvania 19106

Dear Mr. Schramm:

The Clean Air Act Amendments of 1977 have substantially altered the State's responsibilities with respect to air quality planning, particularly in areas which are currently violating the National Ambient Air Quality Standards. Implementation Plan revisions are required by January 1, 1979 for all such "non-attainment areas." Section 174 of the Act contains special provisions for selection of an appropriate planning agency, which are applicable in photochemical oxidant and carbon monoxide non-attainment areas. Since these pollutants are primarily motor-vehicle related, a major portion of the Implementation Plan will consist of transportation control measures. It was the intent of Congress in Section 174 to encourage integration of the transportation control planning responsibility with the more traditional transportation planning activities in the State. To this end, the Act recommends designation of the organization of local elected officials, responsible for transportation planning in the affected area, to carry out the plan preparation.

Maryland has two identified non-attainment areas for photochemical oxidant and carbon monoxide. These are the Metropolitan Baltimore Region and the Maryland portion of the National Capital Region. Pursuant to Section 174 of the Act, the Regional Planning Council in Baltimore and the Metropolitan Washington Council of Governments have passed resolutions seeking designation as the responsible agency for transportation control plan preparation in their respective regions. These resolutions have been transmitted to me for certification to the EPA and are contained in Attachment 1.

Each agency has also submitted preliminary assignments of responsibilities for preparation of the plan revisions which are contained in Tables 1 to 4 of Attachment 2.

The Metropolitan Washington Council of Governments (COG) is an association of fifteen local general purpose governments in the Washington metropolitan region which was formed in 1957 to foster cooperative action and coordinate activities among the independent jurisdictions in the region. COG is currently responsible for regional planning and coordination concerning land use policy, transportation, community resources, public safety, water supply and treatment, and air quality. These functions are largely carried out by means of the various COG committees, such as the Air Quality Planning Committee and the Transportation Planning Board. Their respective roles in the upcoming implementation planning process are detailed in the COG resolution in Attachment 1.

In 1963, the Regional Planning Council was established by the Governor and General Assembly of Maryland as the official planning agency for the Baltimore Region. It is composed of elected officials from the jurisdictions in the metropolitan area as well as non-voting representatives from the State Departments of Health and Mental Hygiene, Natural Resources, Planning and Transportation and the Federal Highway Administration and the Department of Housing and Urban Development. As such, it provides a forum for the satisfactory solution of common problems and promotes coordination through its committees, joint use of data and exchange of information. A new committee, the Regional Air Quality Task Force, has been formed in order to enable the Regional Planning Council to properly fulfill the planning obligations it seeks to undertake. The manner in which the Regional Planning Council intends to perform the planning required by Section 174 is outlined in its resolution and attached prospectus which appears in Attachment 1.

In summary, I have considered the attached resolutions, the requirements of the Clean Air Act as explained in the Section 174 Guidelines issued by the EPA and Federal Highway Administration, and the duties and functions of these two organizations, and I believe that they satisfy the established criteria. Therefore, I hereby certify the Regional Planning Council in Baltimore and the Metropolitan Washington Council of Governments in Washington, D. C., to perform the transportation control planning function under Section 174. I also certify that the Department of Health and Mental Hygiene will have the lead role for the planning of stationary source control measures in the Baltimore Metropolitan Area and the responsibility for coordination of the total package to be presented in January of 1979. In this capacity, it will tie together both stationary and mobile source elements and be responsible for photochemical oxidant modeling of the resultant package.

In the Maryland portion of the National Capital Area, I certify the National Capital Air Quality Planning Committee as the body with the lead responsibility for stationary sources of photochemical oxidant precursors and carbon monoxide. Again, the Department of Health and Mental Hygiene will coordinate the adoptions and submittal of the combination of elements to you in January of 1979.

In conclusion, I would like to emphasize that the State, under State and Federal law, is ultimately responsible for meeting air quality objectives and, together with local governments, is responsible for funding and implementing the measures to achieve those objectives. For this reason, I urge you to help assure that the responsible State agencies are provided adequate staff and financial support to properly guide and manage these regional efforts in keeping with these mandated responsibilities.

Sincerely,

Blair Lee III
Acting Governor

BL:NS:grc

cc: Dr. Neil Solomon
Mr. Donald H. Noren
Dr. Benjamin D. White

APPENDIX B

--RAQTF Questionnaire

--Results From RAQTF Questionnaire

Clean Air and Transportation

Clean Air and Transportation

Clean Air and Transportation

Clean Air and Transportation

WORK SESSION, Part 1:

Tuesday, June 6, 1978, 7 p.m.—10 p.m.

PLACE:
Polytechnic High School Cafeteria
Falls Road and Cold Spring Lane
Baltimore, Maryland 21209

Sponsored by the Regional Air Quality Task Force, an advisory group of the Regional Planning Council

Preparation of this questionnaire was funded by the U.S. Department of Transportation, the Environmental Protection Agency, the Maryland Department of Transportation, the Maryland Department of Health and Mental Hygiene and the Regional Planning Council.

About Yourself

1. Are you a member of the Regional Air Quality Task Force?

____ yes ____ no

2. Is your special interest in

____ transportation?

____ health?

____ the environment?

____ the economy?

____ community issues?

____ other?
please specify:

3. How did you find out about tonight's work session?

____ flyer

____ newspaper

____ TV

____ radio

____ word-of-mouth

____ other
please specify:

4. Where do you live?

____ Anne Arundel County

____ Baltimore City

____ Baltimore County

____ Carroll County

____ Harford County

____ Howard County

About This Questionnaire

Thank you for taking the time to work with us as we develop a Transportation Control Plan to reduce automobile emissions to meet the standards set by the 1977 Clean Air Act Amendments. Our initial plan will be submitted to EPA on January 1, 1979 as part of an overall state air quality plan. A revised, more thorough plan will be submitted in 1982.

The purpose of these two work sessions is to get your ideas about some transportation measures that could reduce auto pollution. We are examining these measures at the suggestion of EPA and the U.S. Congress, as well as state and local planners.

The information that is included in the top sections of this questionnaire is to help you evaluate the measures. There is also room at the end of the questionnaire for any additional measures that you think should be considered. Please keep in mind that some of the information that we have provided is only a best estimate at this time. Continuing studies over the next few years will provide us with more reliable data.

In this questionnaire, we are asking you to consider each measure individually. This may be unrealistic for a number of measures which tend to work better in combinations. In the same light, some measures may work against each other. Analysis of combinations of measures will be part of the preparation for the 1982 Transportation Control Plan.

The results of tonight's questionnaires will be compiled and used by the project staff in developing the direction and content of the initial plan. At the second work session, on June 27, a preliminary plan will be presented to you for your review and recommendations.

Over the next few months, prior to the submission of the 1979 plan, information meetings and public hearings will be held. Then, as preparation for the 1982 plan proceeds, and as programs are developed, we will continue to need you ideas, your criticism; and your cooperation in order that the resulting plan is both realistic and effective.

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Measures to Reduce Congestion-Related Emissions

Best Available Information

Traffic Flow Improvements

DEFINITION AND PRESENT STATUS OF MEASURE		Traffic flow improvements rely upon various traffic engineering techniques to increase intersection and street capacities. Traffic flow improvements include: turning lanes; parking restrictions; signalization; redesigned intersections. Traffic flow improvements are made on a continuous basis. Traffic flow improvements can result in reduced emissions because stop and go traffic generates more pollution than free flowing traffic. A potential disadvantage of some traffic flow improvements might be to increase the amount of traffic and associated emissions.	
PROGRAM IMPROVEMENTS (Assumed Below)		Maximum level of traffic engineering adjustments.	
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated	Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated	Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	No	
	Construction or Other Capital Costs/Primary Funding Source	Not Estimated	
	Operating Costs and Primary Funding Source	Not Estimated	
	Earliest Possible Start-up	On-going	

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING: What was most important in arriving at your rating?

REASONS FOR RATING:

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

TIMING (Please circle one): 1 2 3

Staggered or Flexible Work Hours

Employees are allowed or assigned work schedules that start before or after the peak period of traffic congestion. Such a program reduces congestion, increases transit ridership, and improves the flow of motor vehicles generally. There is widespread interest in and some use of this measure among the employers in the Baltimore Region. Limited governmental promotion of staggered or flexible hours currently exists in the Baltimore Region.

Coordination with transit, ridesharing, and parking management is necessary for maximum benefits from this measure.

Initiate a program to promote and coordinate staggered or flexible work hours at major employment centers and large individual employers throughout the Region.

1982: 1.66% 1987: 1.00%

1982: 3.60% 1987: 3.93%

No

None

$200,000 annually (Federal and State)

1979

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Encourage Bicycles And Mopeds

Bicycles are a nonpolluting transportation alternative that can be used for short non-work and recreational trips. Some communities have been successful in promoting bicycle commuting. Mopeds are also a highly fuel efficient means of commuting. Bicycles and mopeds could replace some autos in high congestion areas where polluting emissions are highest because of stop-and-go traffic. Minimal attention has been paid to the bicyclists' need for safety on the road and security of storage.

. Substantial promotion effort to encourage use of bicycles/mopeds for short trips.
. Provision of storage facilities and improve safety education programs.
. Designate or construct selected bike lanes/routes, and other road improvements

1982: 0.12% 1987: 0.16%

1982: 0.12% 1987: 0.27%

State and Local

$500,000 annually (Federal and State)

$300,000 annually (Federal and State)

1979

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

On Street Parking Restrictions

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		On street parking restrictions refer to a number of measures that either reduce or eliminate the amount of curb-side parking. Implementation of this measure increases the through capacity of a street and allows vehicles to move faster. This strategy is widely used in existing activity centers during peak periods.	
PROGRAM IMPROVEMENTS (Assumed Below)		Current peak period parking restrictions would be expanded to other street.	
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated	Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated	Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	Local	
	Construction or Other Capital Costs/Primary Funding Source	Not estimated	
	Operating Costs and Primary Funding Source	Not estimated	
	Earliest Possible Start-up	On-going	

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Control of Extended Idling

The air pollution associated with idling of motor vehicles can be reduced through public education, changes in laws, or through traffic engineering. The recently enacted legislation which permits right turns on red will result in less idling at intersections.	
Initiation of public awareness campaign to encourage the elimination of idling of motor vehicles during waiting periods.	
1982: 2.45% 1987: 1.60%	
N/A N/A	
No	
None	
$25,000 (Federal and State)	
1979	
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Barriers to Automobile Use

Best Available Information

Residential Permit Parking

DEFINITION AND PRESENT STATUS OF MEASURE		This measure acts as a barrier to automobile use by eliminating commuter parking in certain residential areas. Once in place, only vehicles with valid parking stickers or visitor's passes would be allowed to park in the affected neighborhoods during the work day. A residential permit parking program was recently put into effect in the Oakenshawe section of Baltimore City. To date, Baltimore City is the only local government that has a residential permit parking system.	
PROGRAM IMPROVEMENTS (Assumed Below)		Carry out a residential permit parking program in all neighborhoods where conflicts exist between commuter parking and residential parking.	
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated	Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated	Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	Local	
	Construction or Other Capital Costs/Primary Funding Source	Some costs for signs.	
	Operating Costs and Primary Funding Source	Not estimated. Costs would probably be balanced by fines.	
	Earliest Possible Start-up	1979	

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Parking Surcharge - Downtown Baltimore	Parking Surcharge - Surburban Employment Centers
This measure would involve a surcharge over and above existing parking charges for all-day parkers in downtown Baltimore City. No program of this nature exists at the present time.	This measure seeks to discourage the use of automobiles by increasing the costs of parking in the suburbs and outlying communities in Baltimore City. No program of this nature exists in the Baltimore Region.
Impose a $2 parking surcharge on all-day parkers in downtown Baltimore City.	Impose parking charges in the suburbs and outlying communities in Baltimore City which are as high as those in effect in downtown Baltimore City.
1982: 0.70% 1987: 0.42%	1982: 2.17% 1987: 1.30%
1982: 1.51% 1987: 1.65%	1982: 4.68% 1987: 5.11%
Local	Local
None	None
Small (Local)	Small (Local)
1982	1982
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Auto-Free Zones

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		This measure actually prohibits the use of automobiles within certain designated areas. To be effectual, Auto Free Zones must have a system of improved pedestrian ways, bikeways, exclusive bus lanes, mini-buses or people movers, or some other mobility aid to replace the automobile. Except for very small areas (e.g., Lexington Mall), this measure has yet to be implemented in the Baltimore Region.
PROGRAM IMPROVEMENTS (Assumed Below)		Establish Auto Free Zones in downtown Baltimore, Towson, and Annapolis, together with alternative transportation systems.
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	Local
	Construction or Other Capital Costs/Primary Funding Source	Not estimated
	Operating Costs and Primary Funding Source	Not estimated
	Earliest Possible Start-up	1981

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING: What was most important in arriving at your rating?

REASONS FOR RATING:

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

TIMING (Please circle one): 1 2 3

Road Tolls		Gas Rationing	
Road tolls are user charges for traveling on certain roadways. Road tolls could be used selectively to discourage automobile use during peak period travel times. Tolls have never been used in the Baltimore Region as barriers to automobile use.		Gas rationing acts as a barrier to automobile travel by limiting the amount of available gasoline. Except for war time, this measure has never been utilized.	
Convert to toll facilities certain regional expressways and major arterials which lead to employment and business centers.		Establish a gas rationing program in the Baltimore Region which will reduce vehicular travel.	
Not Estimated	Not Estimated	Variable	Variable
Not Estimated	Not Estimated	Variable	Variable
Federal, State, and Local		State	
Costs covered by tolls paid by users		None	
Costs covered by tolls paid by users		An unknown high cost	
1982		1980	

IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	**RATING (Please circle one):** 1 2 3 4 5
REASONS FOR RATING:	**REASONS FOR RATING:**
TIMING (Please circle one): 1 2 3	**TIMING (Please circle one):** 1 2 3

Increased Fuel Taxes

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		Fuel taxes act as economic disincentives to discourage trip making. Currently, fuel taxes are used only to generate revenue and are not high enough to reduce travel significantly.
PROGRAM IMPROVEMENTS (Assumed Below)		Increase state fuel tax from 9¢ per gallon to 29¢ per gallon of gasoline.
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	1982: 0.69% 1987: 0.42%
	Energy Savings: % reduction of motor vehicle fuel used	1982: 1.49% 1987: 1.63%
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	State
	Construction or Other Capital Costs/Primary Funding Source	None
	Operating Costs and Primary Funding Source	Not estimated
	Earliest Possible Start-up	1980

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Incentives for High Occupancy Vehicles

Improved Rapid Transit

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		This measure involves expanding the capacity and improving the services provided by public transit operators and commuter railroads. A variety of programs to improve transit are underway in the Baltimore Region. These programs range from rapid transit construction to minor operational adjustments.
PROGRAM IMPROVEMENTS (Assumed Below)		. Rapid Rail transit line from downtown Owings Mills . Light Rail transit line from downtown to Cockeysville . Feeder bus systems for the above lines . Improved commuter RR services from Aberdeen to Baltimore to Washington, D.C.
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	1982: 0.28% 1987: 0.56%
	Energy Savings: % reduction of motor vehicle fuel used	1982: 0.60% 1987: 1.94%
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	State and Local
	Construction or Other Capital Costs/Primary Funding Source	$918,850,000 (Federal and State)
	Operating Costs and Primary Funding Source	Substantial Subsidy (Federal and State)
	Earliest Possible Start-up	Construction of line from downtown to Reisterstown Plaza is underway.

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Bus Service Improvements	Reduced Transit Fares
Patronage and utilization of bus transit could be enhanced by increasing the number and frequency of buses assigned to existing routes. This would reduce overcrowding, shorten waiting times and ease line-to-line transfers.	The practice in Baltimore, as in most metropolitan areas, is to increase transit fares as operating costs escalate.
Carry out a substantial bus service improvement program.	Lower transit fares by 10 cents.
1982: 0.08% 1987: 0.10%	1982: 0.32% 1987: 0.19%
1982: 0.18% 1987: 0.21%	1982: 0.68% 1987: 0.74%
No	No
Not estimated	None
Not estimated	Substantial increase in operating subsidy (Federal and State)
1980	1980
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Carpooling

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		A carpool is an auto that carries at least two persons. The region's carpool matching program, Computeride, has been in existence since 1974.
PROGRAM IMPROVEMENTS (Assumed Below)		. 1,500 new carpools annually. . Increased public awareness program. . Employer provision of incentives for carpooling.
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	1982: 0.76% 1987: 0.84%
	Energy Savings: % reduction of motor vehicle fuel used	1982: 1.65% 1987: 3.30%
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	No
	Construction or Other Capital Costs/Primary Funding Source	None
	Operating Costs and Primary Funding Source	$200,000 (Federal and State)
	Earliest Possible Start-up	Ongoing program

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Studv or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Vanpooling	**Exclusive Lanes for Buses and Ridesharing**
This strategy increases the attractiveness and financial advantages of sharing rides to work over long commuting distances. A vanpool carries between 8-15 people. Vango (a non-profit organization) has been helping potential vanpoolers. It has also started a leasing program of vans which reduces the financial risks of forming vanpools.	Exclusive lanes allocate greater street capacity to buses and other high occupancy vehicles, thus discouraging the number of driver-only cars and reducing air pollution. Baltimore has had exclusive bus lands in the downtown area since 1958. Exclusive lanes were established on St. Paul St., Charles St., and York/Greenmount Avenue. The exclusive curb lanes during peak hours can improve travel time by 1-5 minutes and increase bus operating speeds by 1-5 miles per hour. No exclusive lanes for carpools or vanpools exist in the Baltimore Region.
. 100 new vanpools annually. . Increased public awareness campaign. . Reduce relative cost of vanpool operations. . Employer provision of incentives for vanpooling.	. Establish exclusive bus/carpool/vanpool lanes where demand warrants it and the physical system can accomodate it. . Vigorously enforce the exclusive use of the lanes.
1982: 0.24% 1987: 0.28%	1982: 0.08% 1987: 0.05%
1982: 0.52% 1987: 1.10%	1982: 0.18% 1987: 0.19%
No	State and Local
None	Varies between $1,000 and $6,000 per mile of lane.
$100,000 annually (Federal and State)	Small - not estimated
Ongoing	1979
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Park 'N' Ride Lots

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		Park and ride lots provide free parking for those commuters who then transfer to express buses, vanpools, or car pools. Currently there are nine park and ride lots in operation in the Baltimore metropolitan area.
PROGRAM IMPROVEMENTS (Assumed Below)		Develop 41 park and ride lots: 8 in Anne Arundel County 4 in Baltimore City 12 in Baltimore County 2 in Harford County 7 in Carroll County 8 in Howard County
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	1982: 0.27% 1987: 0.26%
	Energy Savings: % reduction of motor vehicle fuel used	1982: 0.87% 1987: 1.95%
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	No.
	Construction or Other Capital Costs/Primary Funding Source	About $14 million (Federal and State)
	Operating Costs and Primary Funding Source	Small
	Earliest Possible Start-up	On-Going

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING: How would you react if this program were carried out? 1. strongly support 2. support 3. indifferent 4. oppose 5. strongly oppose	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING: What was most important in arriving at your rating?	REASONS FOR RATING:
TIMING: When should this measure be implemented? 1. as soon as possible 2. Study or test first 3. Never implement	TIMING (Please circle one): 1 2 3

Preferential Parking for Ridesharing

This measure encourages ride sharing by reserving parking spaces and/or reducing parking rates for poolers. Some employers and local governments offer preferential treatment to employees who carpool and vanpool. Currently Baltimore City operates six preferential carpool parking lots throughout the downtown.	
Promote ridesharing by preferential parking incentives including construction of parking lots for new poolers, parking charges for gov't. employees who do not share rides, and allocation of 50% of gov't-run commuter parking for poolers.	
Not Estimated Not Estimated	
Not Estimated Not Estimated	
No	
$9/sq.yard to construct parking lots (Federal, local, private)	
Small	
On-going	
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Measures for Cleaner Vehicles

Best Available Information

Motor Vehicle Inspection and Maintenance

DEFINITION AND PRESENT STATUS OF MEASURE		The periodic inspection and maintenance of motor vehicles would eliminate a large amount of polluting emissions. At present Maryland does not have an inspection program for motor vehicle emissions. Only safety inspections are made when vehicles are traded.
PROGRAM IMPROVEMENTS (Assumed Below)		All motor vehicles would be inspected and maintained annually to reduce polluting emissions through tune-ups of motors, and repairing emission control devices
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	1982: 3.67% 1987: 10.72%
	Energy Savings: % reduction of motor vehicle fuel used	N/A N/A
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	State
	Construction or Other Capital Costs/Primary Funding Source	
	Operating Costs and Primary Funding Source	
	Earliest Possible Start-up	1980

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING: What was most important in arriving at your rating?

REASONS FOR RATING:

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

TIMING (Please circle one): 1 2 3

Cleaner Fleet Vehicle Engines and Fuels	Retrofit of Emission Control Devices
"Fleet vehicles" refers to the group of trucks, buses, or cars used by a business or agency. Programs for fleet vehicle operations include conversion to cleaner engines or fuels, the purchase of fuel efficient vehicles, and other efforts which would reduce pollution. In Baltimore some private fleet operators are switching to cleaner fuels and engines.	This measure involves installing pollution control devices, such as catalytic converters, on motor vehicles not originally equipped with them. There is no program of this nature in Baltimore at the present time.
Encourage public and private operators of fleets of vehicles to keep vehicles in tune, to purchase diesel rather than gasoline trucks, and to undertake other actions to reduce vehicle emissions.	All vehicles not equipped with pollution control devices would be modified with exhaust and carburetor devices to reduce emmissions.
Not Estimated Not Estimated	1982: 12.06% · 1987: 3.87%
Not Estimated Not Estimated	N/A N/A
No	State or Local
$50,000 (Federal and State)	$200,000 annually (Federal and State)
Savings to fleet operators would probably offset their costs.	Substantial conversion costs borne by owners of older vehicles.
	1980
IMPACT ON COMMUNITY: (residential, commercial, other):	IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one): 1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:	REASONS FOR RATING:
TIMING (Please circle one): 1 2 3	TIMING (Please circle one): 1 2 3

Cold Start Emission Reduction Programs

Best Available Information

DEFINITION AND PRESENT STATUS OF MEASURE		Automobiles pollute more when operating with cold engines. This measure would include efforts to reduce the number of short trips and the associated cold starts. An occasional public service announcement concerning cold starts is made in the Baltimore Region.	
PROGRAM IMPROVEMENTS (Assumed Below)		A continuing public education campaign to encourage drivers to reduce the number of short trips made by automobile by substituting another travel mode or by combining several short trips into one trip.	
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated	Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated	Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	No	
	Construction or Other Capital Costs/Primary Funding Source	None	
	Operating Costs and Primary Funding Source	$30,000 (Federal and State)	
	Earliest Possible Start-up	1979	

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Other Measures

Best Available Information

Land Use Management

DEFINITION AND PRESENT STATUS OF MEASURE		Land use management controls the location and amount of new development and associated traffic by such measures as: 1) zoning and subdivision regulations, 2) growth mgt. (limiting construction of facilities like highways, schools, utilities, etc.), 3) farmland preservation, and 4) "indirect source review" of projects which generate traffic and auto-related pollution. Anne Arundel and Baltimore Cos. are preparing growth management programs & development control ordinances. Carroll and Howard Cos. have enacted measures to protect agricultural land. Indirect source reviews are not in effect anywhere in the Baltimore Region.
PROGRAM IMPROVEMENTS (Assumed Below)		. Carroll County and State of Maryland farmland preservation programs. . Enactment of Anne Arundel and Balto.Co's.growth management programs. . Enactment of indirect source review regulations.
EFFECTIVENESS OF PROGRAM:	Pollution Reduction: % of motor vehicle hydrocarbons	Not Estimated Not Estimated
	Energy Savings: % reduction of motor vehicle fuel used	Not Estimated Not Estimated
CHARACTERISTICS OF PROGRAM	New Legislation Necessary?	State and Local
	Construction or Other Capital Costs/Primary Funding Source	None
	Operating Costs and Primary Funding Source	Not estimated
	Earliest Possible Start-up	Parts, on-going. Others, 1982

Your Reactions

IMPACT ASSESMENT: Please write down your thoughts on the impact of this measure on the community. What do you see as some of the opportunities and problems associated with it ? (Extra sheets are provided at the end).

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

REASONS FOR RATING: What was most important in arriving at your rating?

TIMING: When should this measure be implemented?

1. as soon as possible
2. Study or test first
3. Never implement

IMPACT ON COMMUNITY:
(residential, commercial, other):

RATING (Please circle one): 1 2 3 4 5

REASONS FOR RATING:

TIMING (Please circle one): 1 2 3

Episodic Vehicle Controls		**Other Measures: Your Suggestions**
Episodic vehicle controls restrict the number of motor vehicles allowed to operate on days which are forecasted to have high levels of pollution. No such program is in effect in the Baltimore Region.		
Enactment of a system which would allow fewer vehicles to operate during high levels of air pollution		
Variable	Variable	
Variable	Variable	
State		
None		
Not estimated		
1982		
IMPACT ON COMMUNITY: (residential, commercial, other):		IMPACT ON COMMUNITY: (residential, commercial, other):
RATING (Please circle one):	1 2 3 4 5	RATING (Please circle one): 1 2 3 4 5
REASONS FOR RATING:		REASONS FOR RATING:
TIMING (Please circle one):	1 2 3	TIMING (Please circle one): 1 2 3

RESULTS FROM QUESTIONNAIRE
ON CLEAN AIR AND TRANSPORTATION

Sponsored by
The Regional Air Quality Task Force
an advisory group of
The Regional Planning Council
Baltimore, Maryland

June, 1978

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Preparation of this report was funded by the U.S. Department of Transportation, the Environmental Protection Agency, the Maryland Department of Transportation, the Maryland Department of Health and Mental Hygiene and the Regional Planning Council.

ABOUT THESE RESULTS

On June 6, 1978 a public work session on clean air and transportation was sponsored by the Regional Air Quality Task Force, an advisory group of the Regional Planning Council, and the State Bureau of Air Quality Control. Those at that work session filled out a questionnaire to give their ideas about various transportation measures that could reduce air pollution. In addition, some friends and associates of the work session participants also filled out questionnaires which they later sent to us by mail. This summary contains the results.

In addition to writing comments and suggestions concerning the impact of the measures, the respondents were asked to assign two numerical values to each measure, one for a rating and one for timing. Those questions are as follows:

RATING: How would you react if this program were carried out?

1. strongly support
2. support
3. indifferent
4. oppose
5. strongly oppose

TIMING: When should this measure be implemented?

1. as soon as possible
2. study or test first
3. never implement

At the end of the questionnaire, people were asked for their suggestions for other measures that should be considered.

The results that are presented here have been used along with other analyses, in developing the initial set of recommendations for the Transportation Control Plan. They also serve as a means of sharing ideas among Task Force members and other interested citizens as they continue to advise the planning staff.

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Measures to Reduce Congestion-Related Emissions

TRAFFIC FLOW IMPROVEMENTS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	55	1	43
2	23	2	36
3	10	3	14
4	10	4	7
5	2	5	-
	100%		100%

Average rating = 1.82 Average rating = 1.85

Combined average rating = 1.82

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	69	1	85
2	23	2	15
3	8	3	-
	100%		100%

Average timing = 1.4 Average timing = 1.15

Combined average timing = 1.34

REPRESENTATIVE COMMENTS ON TRAFFIC FLOW IMPROVEMENTS:

Advantages

Better traffic flow, reduced driving time and congestion.

Decrease in accidents.

Reduced pollution and energy consumption.

Reduced noise.

Disadvantages

Better traffic flow would increase travel and development in that area.

Increase in speed would result in more accidents and more danger for pedestrians.

Disruptive to neighborhoods: increase in noise, pollution, heavy traffic.

Little improvement in air quality and fuel conservation.

Doesn't attack basic problem of traffic volume.

Considerations and Suggestions

Need for sequential lights to control speed.

Should focus on controls and signals, not widening of roads because of adverse environmental effects.

Measures to Reduce Congestion-Related Emissions

STAGGERED OR FLEXIBLE WORK HOURS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session	
1	44
2	31
3	13
4	10
5	2
	100%

Average rating = 1.97

Rating from mailed returns	
1	21
2	43
3	21
4	15
5	-
	100%

Average rating = 2.28

Combined average rating = 2.04

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session	
1	60
2	29
3	11
	100%

Average timing = 1.52

Timing from mailed returns	
1	54
2	46
3	-
	100%

Average timing = 1.46

Combined average timing = 1.50

REPRESENTATIVE COMMENTS ON STAGGERED OR FLEXIBLE WORK HOURS:

Advantages

Shortened commuting time.

Reduced congestion at peak hours.

Reduced employee absenteeism.

Flexibility for meeting family emergencies.

More efficient utilization of all facilities.

Government offices might be able to stay open longer.

Longer range benefits.

Very cost-effective.

Disadvantages

Decreased opportinities for ridesharing and transit use.

Might extend peak traffic congestion for residential areas.

Increased length of work day, resulting in less efficiency.

Interference with businesses that cannot operate this way.

Disruption of family life if schedules do not coincide.

Increased twilight/night driving may result in more accidents.

Considerations and Suggestions

Commuters would still travel during morning peak hours to compete for parking.

Should be done on a voluntary basis.

Needs more study and pilot testing.

Measures to Reduce Congestion-Related Emissions

ENCOURAGE BICYCLES AND MOPEDS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	41	1	36
2	25	2	22
3	15	3	28
4	13	4	14
5	6	5	-
	100%		100%

Average rating = 2.22

Average rating = 2.21

Combined average rating = 2.21

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	53	1	46
2	35	2	46
3	12	3	8
	100%		100%

Average timing = 1.60

Average timing = 1.61

Combined average timing = 1.60

REPRESENTATIVE COMMENTS ON ENCOURAGING BICYCLES AND MOPEDS:

Advantages

Reduction in noise and pollution.

Healthier and less expensive means of travel.

Decreased need for new roads.

Disadvantages

Limited by weather.

Noise caused by mopeds.

Potential increase of accidents; danger of riding in heavy traffic and at high speeds.

Difficult to meet lane needs of bicycles in already developed parts of the City.

Questionable effectiveness because only limited segments of the population are attracted to these modes.

Impractical for commuting; a recreational vehicle only.

Considerations and Suggestions

Need for mopeds to be controlled like other motor vehicles

Need for safety and traffic law education programs; promotional campaigns.

Need for facilities for commuters: safe storage, showers, places to change clothes.

Need for safer routes and bike paths.

Bikes might be provided free for City use.

Measures to Reduce Congestion-Related Emissions

ON-STREET PARKING RESTRICTIONS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	31	1	8
2	28	2	50
3	21	3	14
4	14	4	14
5	6	5	14
	100%		100%

Average rating = 2.39

Average rating = 2.78

Combined average rating = 2.48

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	44	1	42
2	35	2	33
3	21	3	25
	100%		100%

Average timing = 1.76

Average timing = 1.83

Combined average timing = 1.78

REPRESENTATIVE COMMENTS ON ON-STREET PARKING RESTRICTIONS:

Advantages

Transit use encouraged.

Accidents reduced.

Good measure if used only to improve flow of transit vehicles.

Beneficial to commercial areas if restrictions are against long-term parking only.

Positive if done only during peak periods.

Positive if implemented on city-wide basis.

Disadvantages

Unfair to City residents: restricts parking near homes, discourages city living (i.e. encourages sprawl).

Improved traffic flow increases travel, noise, speed, problems for pedestrians, chance of accidents.

Hardship for commuters.

Detrimental to business, discourages suburban access to downtown.

Considerations and Suggestions

Need for perimeter parking lots and frequent bus service to commercial areas.

Must provide adequate off-street parking (eg. underground for office buildings).

Measures to Reduce Congestion-Related Emissions

CONTROL OF EXTENDED IDLING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	74	1	64
2	22	2	22
3	2	3	14
4	-	4	-
5	2	5	-
	100%		100%

Average rating = 1.36

Average rating = 1.5

Combined average rating = 1.39

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	75	1	77
2	20	2	23
3	5	3	-
	100%		100%

Average timing = 1.29

Average timing = 1.23

Combined average timing = 1.27

REPRESENTATIVE COMMENTS ON CONTROL OF EXTENDED IDLING:

Advantages

Reduced pollution, noise, and congestion

Easily implemented.

Disadvantages

Difficult to enforce.

Public awareness program unlikely to change behavior--need for stronger measures.

Considerations and Suggestions

Importance of public awareness program.

Public must be informed sufficiently about practices that reduce pollution, but minimize engine wear.

Implications for drive-in banks and fast food places.

Comments Specific to Right Turn on Red

More difficult for pedestrians and bicyclists.

Increased potential for accidents.

Traffic flow improvement may increase auto use.

Has support from most people.

RESIDENTIAL PERMIT PARKING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	31	1	15
2	24	2	24
3	28	3	8
4	15	4	24
5	2	5	39
	100%		100%

Average rating = 2.34   Average rating = 3.61

Combined average rating = 2.63

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	42	1	24
2	49	2	30
3	9	3	46
	100%		100%

Average timing = 1.66   Average timing = 2.23

Combined average timing = 1.79

REPRESENTATIVE COMMENTS ON RESIDENTIAL PERMIT PARKING:

Advantages

Good impact on neighborhoods: increased availability of parking for residents, reduced pollution.

Encouraged ridesharing and transit use.

Disadvantages

Difficult to enforce and administer.

Detrimental to businesses that lack parking available at suburban malls.

Not workable for 2 or 3 car family.

Parking problem will just shift to other neighborhoods.

Considerations and Suggestions

Need for off-street parking facilities (lots, garages).

Need for improved public transit.

Must not penalize commuters who really need to drive. Need to look at why commuters using residential parking (eg. no other parking available? inadequate transit service? proximity of large employer or institution?).

Need for support and promotion by local organizations and communities.

PARKING SURCHARGE - DOWNTOWN BALTIMORE

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	26	1	21
2	23	2	21
3	16	3	14
4	16	4	14
5	19	5	28
	100%		100%

Average rating = 2.82

Average rating = 3.07

Combined average rating = 2.87

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	27	1	7
2	44	2	54
3	29	3	39
	100%		100%

Average timing = 2.02

Average timing = 2.30

Combined average timing = 2.08

REPRESENTATIVE COMMENTS ON PARKING SURCHARGE IN DOWNTOWN BALTIMORE:

Advantages

Encouraged use of public transit (more competative costs) and ridesharing (to split costs).

Disadvantages

Detrimental to businesses that might lose employees and customers to suburban businesses.

Inflationary: employees may want to be reimbursed or get raise to cover parking expenses.

Parking fees already too high.

Considerations and Suggestions

Reasonable alternatives must be available to prevent adverse economic impact on city (eg. improved bus system).

Should exempt carpools.

Should be accompanied by public education program including publicizing relative costs of travel.

Difficult to implement.

Must be tied in with regional plan, not limited to Baltimore City.

PARKING SURCHARGE - SUBURBAN EMPLOYMENT CENTERS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session

1	12
2	20
3	31
4	15
5	22
	100%

Average rating = 3.17

Rating from mailed returns

1	15
2	-
3	15
4	35
5	35
	100%

Average rating = 3.78

Combined average rating = 3.31

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session

1	7
2	61
3	32
	100%

Average timing = 2.25

Timing from mailed returns

1	7
2	23
3	70
	100%

Average timing = 2.61

Combined average timing = 2.33

REPRESENTATIVE COMMENTS ON PARKING SURCHARGE AT SURBURBAN EMPLOYMENT CENTERS:

Advantages

Reduction in unnecessary trips.

Disadvantages

Detrimental to commercial business and economic growth in the suburbs.

Difficult to implement and enforce: meters not effective, many small businesses have own lots.

Impractical: suburban density not sufficient to warrant ridesharing or public transit except to large employers.

Interferes with mall lots being used as park'n'ride lots for carpools.

Detrimental to employer-employee relations.

Ineffective: people will still use cars.

Considerations and Suggestions

Must be accompanied by increased transit service in these areas.

Will work if surrounding counties also implement program.

Should apply only to all day parking.

Implement only in areas of high density auto use.

Charge suburbanites for parking downtown.

Need for intelligent public awareness campaign.

AUTO-FREE ZONES

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	45	1	42
2	31	2	21
3	17	3	28
4	7	4	7
5	-	5	-
	100%		100%

Average rating = 1.85

Average rating = 2.0

Combined average rating = 1.88

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	43	1	27
2	55	2	73
3	2	3	-
	100%		100%

Average timing = 1.59

Average timing = 1.72

Combined average timing = 1.62

REPRESENTATIVE COMMENTS ON AUTO-FREE ZONES:

Advantages

More pleasant shopping areas.

More pedestrian space.

A boon for merchants and surrounding parking lot operators.

Easy to implement.

Reduction of emissions in that area.

According to models in other European and American cities, improves businesses, attracts tourists, attracts residential development.

Disadvantages

Increased congestion on adjacent streets, unless alternate routes provided.

Detrimental to small businesses.

Considerations and Suggestions

Need for adequate public transportation facilities within the zone.

Need for adequate parking outside the zone and/or transportation to the zone.

Need for proper design and integration of pedestrian walkways.

Must be planned with care so as not to disrupt commercial sector.

Should be done in areas that show expanding pedestrian use.

Requires good promotional campaign to gain public support.

Questionable emissions or energy savings benefits.

Barriers to Automobile Use

ROAD TOLLS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	-	1	-
2	24	2	-
3	17	3	21
4	33	4	36
5	26	5	43
	100%		100%

Average rating = 3.64

Average rating = 4.21

Combined average rating = 3.77

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	7	1	-
2	41	2	23
3	52	3	77
	100%		100%

Average timing = 2.45

Average timing = 2.76

Combined average timing = 2.52

REPRESENTATIVE COMMENTS ON ROAD TOLLS:

Advantages

A good way to increase State revenues.

Disadvantages

Increased congestion on local toll-free roads (except where having to cross a river or other physical barrier, people would find an alternative route before relying on transit).

Impractical: costly to operate, toll collection would cause traffic backups and increased emissions.

Inflationary: higher costs of getting to work would be passed on to employers and then to customers; hardship to the poor.

Would discourage consumer trips to downtown.

Counterproductive: people would pay to use cars unless strongly deterred.

No public support.

Considerations and Suggestions

Carpools and bicycles should pass free.

Increase tolls during peak periods to discourage commuters.

Must examine the use of a tax as a punitive measure. How would revenue be used? Who would benefit?

Use proceeds to support mass transit system.

Barriers to Automobile Use

GAS RATIONING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	6	1	-
2	12	2	14
3	15	3	-
4	24	4	22
5	43	5	64
	100%		100%

Average rating = 3.80 Average rating = 4.35

Combined average rating = 3.92

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	6	1	-
2	33	2	-
3	61	3	100
	100%		100%

Average timing = 2.54 Average timing = 3.0

Combined average timing = 2.64

REPRESENTATIVE COMMENTS ON GAS RATIONING:

Advantages

Encouragement of development of alternative fuels and use of smaller, more efficient cars.

More socially desirable than increased taxes.

Disadvantages

Fair enforcement difficult.

Potential for creating black markets.

Lack of public acceptance.

Excessive regulation; an extreme measure.

Hardship for people in rural areas because of longer distance.

Considerations and Suggestions

Might work if implemented nationally.

Need for intelligent promotional campaign.

A last resort.

Barriers to Automobile Use

INCREASED FUEL TAXES

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session

1	17
2	17
3	16
4	25
5	25
	100%

Average rating = 3.22

Rating from mailed returns

1	36
2	7
3	-
4	14
5	43
	100%

Average rating = 3.21

Combined average rating = 3.22

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session

1	19
2	49
3	32
	100%

Average timing = 2.11

Timing from mailed returns

1	40
2	7
3	53
	100%

Average timing = 2.15

Combined average timing = 2.12

REPRESENTATIVE COMMENTS ON INCREASED FUEL TAXES:

Advantages

Encouraged use of small cars, more efficient engines, and alternative fuels.

Incentive for ridesharing and transit use.

Reduced trip making.

Increase State revenues.

Use of taxes for improvement of other means of transportation.

Reduced energy consumption.

Disadvantages

Inflationary (people would still pay tax).

Ineffective (people would still pay tax).

Hardship for low income people who must drive.

Takes money out of local business community.

Reduced State revenue from reduced consumption.

Considerations and Suggestions

Must provide commuting alternatives.

Exempt vanpools.

Must examine use of collected taxes.

Need for accompanying public awareness campaign.

Incentives for High Occupancy Vehicles

IMPROVED RAPID TRANSIT

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session	
1	67
2	31
3	-
4	-
5	2
	100%

Average rating = 1.40

Rating from mailed returns	
1	36
2	50
3	7
4	-
5	7
	100%

Average rating = 1.92

Combined average rating = 1.52

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session	
1	82
2	16
3	2
	100%

Average timing = 1.20

Timing from mailed returns	
1	50
2	42
3	8
	100%

Average timing = 1.58

Combined average timing = 1.28

REPRESENTATIVE COMMENTS ON IMPROVED PUBLIC TRANSIT:

Advantages

Increased ridership.

Reduced dependence on automobile.

Attractive alternative as fuel and parking costs rise.

Encouraged flow into downtown area.

Reduced pollution.

Disadvantages

Requires substantial tax subsidy.

Not presently designed to serve poorer communities.

Initial disruption in commercial areas caused by construction.

High cost.

Questionable cost effeciveness.

Considerations and Suggestions

Needs to be fast, efficient, clean, comfortable to attract passengers.

Needs strong promotional campaign.

Need for a flexible system including light rail and feeder buses.

Need for compatibility among parts of the system to allow easy transfers.

Need for rapid transit not only between city and suburbs, but also between suburbs.

Need for better transit to Annapolis.

Incentives for High Occupancy Vehicles

BUS SERVICE IMPROVEMENTS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session	
1	72
2	19
3	7
4	2
5	-
	100%

Average rating = 1.40

Rating from mailed returns	
1	72
2	14
3	14
4	-
5	-
	100%

Average rating = 1.42

Combined average rating = 1.40

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session	
1	83
2	17
3	-
	100%

Average timing = 1.17

Timing from mailed returns	
1	85
2	15
3	-
	100%

Average timing = 1.15

Combined average timing = 1.16

REPRESENTATIVE COMMENTS ON BUS SERVICE IMPROVEMENTS:

Advantages

Increased bus ridership.

Decreased dependence on cars.

Beneficial to school children and the elderly.

Beneficial to some businesses.

Strong public acceptance and need.

Reduced pollution.

Disadvantages

Increased noise in neighborhoods.

No appeal to the public.

Considerations and Suggestions

Need for more express buses, park 'n' ride lots, shelters and bus stops.

Need for faster service, more frequency during peak hours.

Need for enforcement of "no smoking" regulations.

Importance that buses be clean and maintained.

Need for improved security.

Need for a regional bus system.

Need for improved promotional efforts.

Show routes on bus signs: people will use buses more if they know exact destination.

Incentives for High Occupancy Vehicles

REDUCED TRANSIT FARES

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	38	1	7
2	24	2	21
3	22	3	35
4	9	4	22
5	7	5	15
	100%		100%

Average rating = 2.23

Average rating = 3.14

Combined average rating = 2.44

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	54	1	31
2	38	2	38
3	8	3	31
	100%		100%

Average timing = 1.53

Average timing = 2.0

Combined average timing = 1.64

REPRESENTATIVE COMMENTS ON REDUCED TRANSIT FARES:

Advantages

Increased ridership.

Attractive alternative as parking and gasoline costs rise and exclusive bus lanes provide faster service.

Beneficial to present ridership (no increased ridership).

Disadvantages

Lower revenues which would lead to reduced services.

Increased subsidies which would result in higher taxes or revenue generated from other modes of travel.

Considerations and Suggestions

Buses should be free .

No fare increases during peak hours.

Present fares are reasonable.

Fares not the primary barrier to transit use .

Bus services must be improved as well .

Riders should bear the cost of bus service .

Operating costs should be covered by fares .

Mass transit should be self supporting, not subsidized.

Incentives for High Occupancy Vehicles

CARPOOLING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	53	1	50
2	33	2	50
3	14	3	-
4	-	4	-
5	-	5	-
	100%		100%

Average rating = 1.62 Average rating = 1.5

Combined average rating = 1.59

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	87	1	77
2	13	2	23
3	-	3	-
	100%		100%

Average timing = 1.13 Average timing = 1.23

Combined average timing = 1.15

REPRESENTATIVE COMMENTS ON CARPOOLING:

Advantages

More flexibility than fixed route transit .

Low cost.

Reduced pollution and energy use.

Chance to get to know neighbors better.

Disadvantages

Not practical; limited impact.

Discouraged by flextime and overtime: difficulty in synchronizing schedules.

Reduced flexibility of time for running personal errands.

Difficulty in breaking people's habit of driving alone.

Difficulty in distinguishing between a "carpool" and a "car" for preferential treatment.

Considerations and Suggestions

Less effective in suburban and rural areas than in urban areas.

Need for strong public awareness/education program.

Need for incentives such as free parking.

Need for support and cooperation of business.

Might work if combined with high gasoline cost.

Should be voluntary.

Should study practicality of computerized local matching lists.

VANPOOLING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	55	1	57
2	28	2	43
3	15	3	-
4	2	4	-
5	-	5	-
	100%		100%

Average rating = 1.65

Average rating = 1.42

Combined average rating = 1.60

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	80	1	85
2	18	2	15
3	2	3	-
	100%		100%

Average timing = 1.24

Average timing = 1.15

Combined average timing = 1.22

REPRESENTATIVE COMMENTS ON VANPOOLING:

Advantages

- Low cost.
- Easy to implement.
- Relaxing.
- Chance to get to know neighbors better.
- More flexible than fixed route transit.
- Reaches areas not served by public transit.
- Reduced air pollution and fuel use.
- Reduced traffic congestion and parking problems.

Disadvantges

- Discouraged by flextime.
- Little growth potential due to public's desire for independent mobility.
- Difficult to administer on a large basis.
- Parking at night poses potential nuisance in neighborhoods.
- Public transit is probably cheaper.

Considerations and Suggestions

- Need for incentives to encourage use.
- Good where practical (e.g., long commuting distances).
- Cost kept low because do not pay for driver's time.

Incentives for High Occupancy Vehicles

EXCLUSIVE LANES FOR BUSES AND RIDESHARING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	46	1	50
2	29	2	22
3	16	3	7
4	7	4	14
5	2	5	7
	100%		100%

Average rating = 1.92 Average rating = 2.07

Combined average rating = 1.95

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	57	1	62
2	38	2	23
3	5	3	15
	100%		100%

Average timing = 1.48 Average timing = 1.53

Combined average timing = 1.49

REPRESENTATIVE COMMENTS ON EXCLUSIVE LANES FOR BUSES AND RIDESHARING:

Advantages

Better use of existing highways.

Encouraged transit use and ridesharing at a minimal cost.

Easy to implement.

Reduced travel time for bus riders and poolers.

Increased bus ridership.

Reduced parking problems.

Cost effective.

Disadvantages

Costly.

Enforcement is a problem; has not seemed to work so far.

Increased congestion (and emissions) in other lanes.

Reduced on-street parking.

Potential adverse effect on bicycling.

Not practical in all areas.

Considerations and Suggestions

Good idea if lanes available on other streets to prevent congestion.

Use of contraflow lanes to prevent congestion.

Needs to be enforced.

Use mostly during peak hours.

Exclusive roads or routes: easier to enforce and to make turns.

Should have bus and bicycle lanes, striped 15 feet wide.

Goes hand-in-hand with bus service improvements and parking surcharges.

Incentives for High Occupancy Vehicles

PARK 'N' RIDE LOTS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	74	1	78
2	24	2	22
3	2	3	-
4	-	4	-
5	-	5	-
	100%		100%

Average rating = 1.28

Average rating = 1.21

Combined average rating = 1.26

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	80	1	93
2	20	2	17
3	-	3	-
	100%		100%

Average timing = 1.20

Average timing = 1.07

Combined average timing = 1.17

REPRESENTATIVE COMMENTS ON PARK 'N' RIDE LOTS:

Advantages

Cost effective.

Reduced traffic, especially in city.

Encouraged ridesharing.

Acceptable to public.

Would eliminate informal group parking in areas where it is undesirable.

Disadvantgaes

Marginal benefits.

Ineffective in keeping people from buying/driving cars.

Considerations and Suggestions

Should have increased funding.

Need for more diversified bus routes.

Reinforces need for clean, reliable bus service.

Must be careful in selecting locations so as not to devour open space.

Should take regional approach in selecting sites.

Should use shopping center lots.

Requires a change in people's travel habits.

Bike storage should be provided.

Cost should be studied.

Need for park 'n' ride lots for suburban travel as well as travel to city.

PREFERENTIAL PARKING FOR RIDESHARING

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	57	1	57
2	33	2	28
3	5	3	15
4	5	4	-
5	-	5	-
	100%		100%

Average rating = 1.55 Average rating = 1.57

Combined average rating = 1.55

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	72	1	84
2	28	2	16
3	-	3	-
	100%		100%

Average timing = 1.28 Average timing = 1.16

Combined average timing = 1.25

REPRESENTATIVE COMMENTS ON PREFERENTIAL PARKING FOR RIDESHARING:

Advantages

Reduced congestion.

Incentive for ridesharing.

Easy to implement.

Cost effective.

Beneficial in non-transit service areas.

Beneficial to residential and commercial areas.

Morale builder.

Counter part to park 'n' ride lots.

Disadvantages

Difficulty of enforcement.

Carpools tend to disintegrate overtime, but still use spaces.

Considerations and Suggestions

Need for adequate enforcement.

Must be coupled with on-street parking restrictions to be effective.

Implement without constructing new parking lots and garages.

Adequate parking must still be available for non-poolers.

Need support of businesses.

Measures for Cleaner Vehicles

MOTOR VEHICLE INSPECTION AND MAINTENANCE

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	67	1	31
2	23	2	31
3	3	3	15
4	3	4	-
5	4	5	23
	100%		100%

Average rating = 1.52

Average rating = 2.53

Combined average rating = 1.75

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	77	1	55
2	14	2	18
3	9	3	27
	100%		100%

Average timing = 1.32

Average timing = 1.72

Combined average timing = 1.41

REPRESENTATIVE COMMENTS ON MOTOR VEHICLE INSPECTION AND MAINTENANCE:

Advantages

Reduced air pollution and energy consumption.

Increased safety of vehicles.

Essential to effective emissions reduction.

Incentive to improve and maintain vehicles.

Places responsibility with car drivers.

Reduced unemployment.

Relatively low cost.

Disadvantages

Difficulty in enforcing fairly and effectively.

Difficult and cumbersome to administer.

Inconvenience and high cost to the public.

Economic hardship for low income people with old cars.

Low public acceptance of a mandatory program, especially if state-operated.

Unnecessary as cleaner, new cars replace old ones.

Costs could be prohibitive.

Considerations and Suggestions

Include trucks and buses in program.

Exclude fleet vehicles.

Implement on voluntary basis with incentives such as free tags or tax credits.

Must control prices, certify mechanics.

Give assistance to those who work on their own cars.

Should only apply in city.

Effective if inspection done by government.

Annual inspections necessary.

Should include safety inspections.

Should be reserved to visible emissions.

CLEANER FLEET VEHICLE ENGINES AND FUELS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	66	1	22
2	22	2	35
3	12	3	22
4	-	4	14
5	-	5	7
	100%		100%

Average rating = 1.46

Average rating = 2.5

Combined average rating = 1.7

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	70	1	53
2	22	2	32
3	8	3	15
	100%		100%

Average timing = 1.36

Average timing = 1.61

Combined average timing = 1.42

REPRESENTATIVE COMMENTS ON CLEANER FLEET VEHICLE ENGINES AND FUELS:

Advantages

Economically sound.

Easily implemented.

Imperative.

Will stimulate the automotive industry.

More important than private cars because more gas is consumed.

No adverse effects.

Disadvantages

Cost passed onto customers.

Difficult to enforce.

Possible economic hardship on small operations.

Considerations and Suggestions

All cars should use propane fuel.

Suggest a changeover to air cooled engines.

Costly: need to give businesses incentives to participate.

Government should set the example for others.

Should not be included in Inspection and Maintenance program.

Should include trucks and buses.

Should be fairly implemented.

Not too important since fleet vehicles are not usually used during peak hours.

What would this do to energy supplies?

Not too important since fleet owners usually operate their vehicles economically and efficiently.

Mandate that public transit vehicles use clean fuels and well maintained engines.

RETROFIT OF EMISSION CONTROL DEVICES

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

	Rating from work session	Rating from mailed returns
1	15	
2	22	15
3	11	21
4	20	21
5	32	43
	100%	100%

Average rating = 3.32

Average rating = 3.92

Combined average rating = 3.46

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

	Timing from work session	Timing from mailed returns
1	14	15
2	42	24
3	44	61
	100%	100%

Average timing = 2.29

Average timing = 2.46

Combined average timing = 2.33

REPRESENTATIVE COMMENTS ON RETROFIT OF EMISSION CONTROL DEVICES:

Advantages

Responsibility placed on cause .

Disadvantages

Not politically feasible .

Difficult to enforce .

Financial hardship for the poor .

Low public acceptance .

Too costly and not cost effective to the government and to car owners .

Unreliable .

Ineffective .

Unnecessary as newer cars are designed for lower emissions .

There are not enough vehicles which are unequipped to make this worthwhile .

Will increase gas consumption .

Considerations and Suggestions

Should be done at time of resale .

Must have skilled mechanics .

Cost should be nominal or paid for by manufacturer .

Do not use catalytic converters--uses too much of the world's platinum supply.

If Inspection and Maintenance is implemented, this measure would be more trouble than it is worth in cost vs. actual emissions reduction .

Let attrition take its place (domestic cars tend to last 3-5 years).

Consider State and/or Federal assistance for low or fixed income families .

Measures for Cleaner Vehicles

COLD START EMISSION REDUCTION PROGRAMS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	42	1	34
2	20	2	9
3	36	3	41
4	2	4	8
5	-	5	8
	100%		100%

Average rating = 2.0　　Average rating = 2.5

Combined average rating = 2.11

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	47	1	66
2	47	2	33
3	6	3	1
	100%		100%

Average timing = 1.60　　Average timing = 1.5

Combined average timing = 1.57

REPRESENTATIVE COMMENTS ON COLD START EMISSION REDUCTION PROGRAMS:

Advantages

High public acceptance.

Increased public awareness.

Inexpensive and easy to implement.

Disadvantages

Ineffective.

Difficulty to implement.

Impossible to enforce and measure.

Unrealistic.

Americans will not respond to this kind of ploy--will resist a change in habits.

Too costly for a public education program.

Considerations and Suggestions

Requires an intensive public education program.

Better to develop alternative fuels.

Problem would resolve itself if other disincentives are developed.

How do we eliminate necessary short trips in winter?

Other Measures

LAND USE MANAGEMENT

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	59	1	28
2	17	2	21
3	2	3	21
4	8	4	15
5	14	5	15
	100%		100%

Average rating = 2.01 Average rating = 2.64

Combined average rating = 2.15

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	58	1	38
2	24	2	38
3	18	3	24
	100%		100%

Average timing = 1.61 Average timing = 1.84

Combined average timing = 1.66

REPRESENTATIVE COMMENTS ON LAND USE MANAGEMENT:

Advantages

Reduction in land speculation.

Reduction in dependence on cars .

The best long term solution .

Reduction in pollution .

Inexpensive and easily implemented .

Preservation of farmland .

Quality of life will improve with the creation of smaller population centers .

Beneficial in the long run .

Disadvantages

Not warranted .

Detrimental to business, economic growth, employment .

Would force development into outlying areas.

Would hurt young people by increasing the cost of homes .

Growth is important and not possible without some pollution .

Limitation on choice to live in rural areas .

Questionable impact on pollution and energy conservation .

Considerations and Suggestions

Rationale should be based on other considerations besides clean air .

Need for more data .

Should be studied by citizens who might be affected .

Better approach would be to have people live near jobs .

Limited growth can mean no growth .

Must be accompanied by adequate transportation .

Need for public awareness program .

Decisions should be made on a jurisdictional level.

Need for more stringent zoning regulations .

Question of financing .

Other Measures

EPISODIC VEHICLE CONTROLS

RATING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = strongly support, 5 = strongly oppose)

Rating from work session		Rating from mailed returns	
1	20	1	8
2	21	2	8
3	21	3	34
4	23	4	8
5	15	5	42
	100%		100%

Average rating = 2.91

Average rating = 3.66

Combined average rating = 3.08

TIMING: PERCENTAGE BREAKDOWN OF RESPONSES
(1 = ASAP, 2 = Study/test first, 3 = Never)

Timing from work session		Timing from mailed returns	
1	29	1	12
2	42	2	33
3	29	3	55
	100%		100%

Average timing = 2.00

Average timing = 2.44

Combined average timing = 2.10

REPRESENTATIVE COMMENTS ON EPISODIC VEHICLE CONTROLS:

Advantages

Increased public awareness of air quality problems.

Beneficial to people with respiratory problems.

Disadvantages

Difficulty to enforce and implement.

Impractical, inconvenient.

Unnecessary.

Detrimental to business.

Difficult to get public awareness, cooperation, and ability to act quickly enough.

Hardship for those who would lose pay for not getting to work.

Absenteeism a burden for industry.

Too severe, subject to constitutional challenge.

Considerations and Suggestions

Exempt ridesharers.

Need for public awareness campaign, but do not "enforce".

To be fair, allow only emergency vehicles, bicycles, public transit--providing more transit on those days.

Modulate traffic so that vehicles must be a certain distance apart or subject to fines.

Modify existing State regulations.

More study needed.

Pilot test on a trial basis to gain acceptance.

SUGGESTIONS FOR ADDITIONAL MEASURES TO CONSIDER:

1. Control of extended idling: Modify traffic signalization during hours of low traffic volume (e.g. 12 to 6 a.m.) from standard green-yellow-red to flashing red or yellow signals at specific intersections.
2. Encourage use of smaller cars by providing more parking spaces sized for small vehicles only.
3. Development of alternative fuels such as hydrogen which can be produced by solar cells. Financial incentives for inventors.
4. Restrict parking by students on school property, and offer reduced fares for students.
5. Increase public awareness by buying blocks of media time which can be used by agencies to promote measures that reduce air pollution.
6. Higher taxes on larger cars.
7. Use electric vehicles on suitable routes.
8. Involve insurance companies, fuel dealers, fleet owners in development of transportation control plan.
9. Implement traffic controls to protect residential neighborhoods from through traffic.
10. Ridesharers and users of park 'n' ride should get a reduction in auto insurance.
11. More study needed on determining synergistic effects of measures.
12. Establish contact with other states to see what types of measures they are implementing.
13. Carpools for suburban grocery shopper.
14. Need for strong support and leadership among local officials. Coordinate project planning and application for public funds.

AVERAGE RATINGS OF TRANSPORTATION MEASURES*

Measure	Average for Work Session	Average for Mailed Returns	Combined Average
Park 'N' Ride Lots	1.28	1.21	1.26
Control of Extended Idling	1.36	1.5	1.39
Bus Service Improvements	1.40	1.42	1.4
Improved Rapid Transit	1.40	1.92	1.52
Cleaner Fleet Vehicle Engines and Fuels	1.46	2.5	1.7
Motor Vehicle Inspection and Maintenance	1.52	2.53	1.75
Preferential Parking for Ridesharing	1.55	1.57	1.55
Carpooling	1.62	1.5	1.59
Vanpooling	1.65	1.42	1.60
Traffic Flow Improvements	1.82	1.85	1.82
Auto-Free Zones	1.85	2.0	1.88
Exclusive Lanes for Buses and Ridesharing	1.92	2.07	1.95
Staggered or Flexible Work Hours	1.97	2.28	2.04
Cold Start Emission Reduction Programs	2.00	2.5	2.11
Land Use Management	2.01	2.64	2.15
Encourage Bicycles and Mopeds	2.22	2.21	2.21
Reduced Transit Fares	2.23	3.14	2.44
Residential Permit Parking	2.34	3.61	2.63
On-Street Parking Restrictions	2.39	2.78	2.48
Parking Surcharge-Downtown Baltimore	2.82	3.07	2.87
Episodic Vehicle Controls	2.91	3.66	3.08
Parking Surcharge-Suburban Employment Centers	3.17	3.78	3.31
Increased Fuel Taxes	3.22	3.21	3.22
Retrofit of Emission Control Devices	3.32	3.92	3.46
Road Tolls	3.64	4.21	3.77
Gas Rationing	3.80	4.35	3.92

* 1 = strongly support
5 = strongly oppose

AVERAGE TIMING FOR TRANSPORTATION MEASURES*

Measure	Average for Work Session	Average for Mailed Returns	Combined Average
Park 'N' Ride Lots	1.20	1.07	1.17
Control of Extended Idling	1.29	1.23	1.27
Bus Service Improvements	1.17	1.15	1.16
Improved Rapid Transit	1.20	1.58	1.28
Cleaner Fleet Vehicle Engines and Fuels	1.36	1.61	1.42
Land Use Management	1.61	1.84	1.66
Motor Vehicle Inspection and Maintenance	1.32	1.72	1.41
Preferential Parking for Ridesharing	1.28	1.16	1.25
Carpooling	1.13	1.23	1.15
Vanpooling	1.24	1.15	1.22
Traffic Flow Improvements	1.40	1.15	1.34
Auto Free Zones	1.59	1.72	1.62
Exclusive Lanes for Buses and Ridesharing	1.48	1.53	1.49
Staggered of Flexible Work Hours	1.52	1.46	1.50
Cold Start Emission Reduction Programs	1.60	1.50	1.57
Encourage Bicycles and Mopeds	1.60	1.61	1.60
Reduced Transit Fares	1.53	2.00	1.64
Residential Permit Parking	1.66	2.23	1.79
On Street Parking Restrictions	1.76	1.83	1.78
Parking Surcharge-Downtown Baltimore	2.02	2.30	2.08
Episodic Vehicle Controls	2.00	2.44	2.10
Parking Surcharge-Suburban Employment Centers	2.25	2.61	2.33
Increased Fuel Taxes	2.11	2.15	2.12
Retrofit of Emission Control Devices	2.29	2.46	2.33
Road Tolls	2.45	2.76	2.52
Gas Rationing	2.54	3.00	2.64

* 1 = as soon as possible
2 = study or test first
3 = never implement

ABOUT THE RESPONDENTS

	At Work Sessions	Mailed Returns
Total	47	14
Task Force members	23	0
Non-members	24	14
Place of residence:		
Anne Arundel County	2	1
Baltimore City	20	4
Baltimore County	17	8
Carroll County	2	0
Harford County	3	0
Howard County	3	1
Special Interests:		
Transportation	23	7
Health	15	4
Environment	26	6
Economy	8	9
Community issues	5	6